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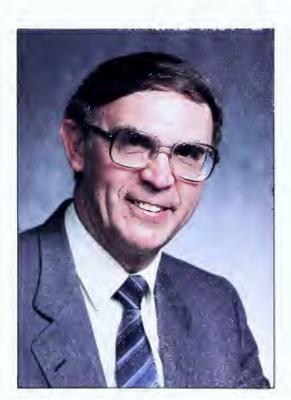






Straight Talk

Managing Water Now and in the Next Century



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

Pennsylvania's fishermen and boaters, and many citizens who respect our bountiful aquatic resources, have long been aware of the need to properly conserve and manage our water. They understand the many important environmental issues such as point and nonpoint pollution abatement; the value of wetlands protection; floodplain regulation; sound development, agricultural and timber-harvest practices; acid precipitation abatement; stream flow protection; public access; and the many other factors directly affecting our aquatic resources.

Fortunately, others are beginning to share these concerns, and last November 13 and 14, a Pennsylvania Conference on Water Management was held in Johnstown.

The prime sponsors of the conference were the Lt. Governor's Office, the Pennsylvania Department of Environmental Resources, the Pennsylvania Emergency Management Agency, the Penn State Environmental Resources Research Institute, and Mr. Phil Walters, a Johnstown resident who authored a recent account of the 1889 Johnstown Flood.

The goal of this conference was to discuss, debate and recommend a strategy to improve Pennsylvania's water policy and prepare the Commonwealth to better protect its most vital resource. This two-day conference explored Pennsylvania's history in managing water and considered future water policy needs. A total of 36 speakers discussed flood control and prevention issues, and water supply, use and management concerns.

Lt. Governor Mark Singel addressed the group and discussed the need for all interested parties to balance efforts to properly manage our valuable water resources. He stressed the importance of protecting our "precious streams."

In his keynote address, Dr. James R. Grace, Deputy Secretary for Resources Management, Pennsylvania Department of Environmental Resources, emphasized the need to educate the public better on the critical issues facing the Commonwealth's efforts to manage water properly into the next century.

The speakers and conference attendees included many of the most experienced water resource professionals in Pennsylvania and nearby states, including water supply system operators, DER flood control and water resource managers, Corps of Engineers experts, attorneys from both the private and public sectors, design engineers, weather and flood forecasters, and many others. Panel sessions were conducted on "Water Use and Availability," "Infrastructure Management," "Water Resource Management," "Water Law and Institutions," "Flood Management" and "Flood Damage Prevention."

I also participated in this conference, and my role differed somewhat from the others because my comments centered on the need for protection of our valuable stream flows and their aquatic life, and provisions for public fishing and boating opportunities. I focused on the need to address these important issues in any future plans or projects affecting our water resources. In turn, I encouraged all attendees to resolve these environmental and public recreational concerns at the earliest stages of plan development, if they expected to gain broad public support for their proposals.

The most important common theme to emerge from the conference was the need to "educate the public about water resources and their conservation." Pennsylvania's fishermen and boaters, and its environmentally aware citizens, can provide powerful support for well-conceived water management efforts. They also can provide potent opposition to plans that do not fully protect our aquatic resources and fail to properly address public fishing and boating recreational concerns.

This group's strength will continue to grow as our aquatic resource education and other environmental education efforts alert more young people and other Pennsylvanians to these concerns. The continued existence of our valuable water and aquatic resources may well depend on involvement by a concerned, knowledgeable public.



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Pennsylvania The Keystone State's Official Fishing Magazine

Where They Bitin'? by Denny Kolakowski Consider the names of the places where anglers try their luck
How to Report a Suspected Violation by WCO Jim Ammon Let the five Ws and an "H Method" help you gather as much information as you can
Pennsylvania Fish Commission Annual Report
On the Water with Dave Wolf "Oh, What a Feeling!"
The Proposed Pennsylvania Trout/Salmon Stamp 20
KIDS PAGE! by Steve Ulsh Is cleaning your fishing equipment more fun than cleaning your room?

The cover

This issue's cover, photographed by Lefty Kreh, is pure wintry wishfulfillment. Wouldn't you like to wet your line there? For an entertaining look at other places where we Pennsylvania anglers would like to be, see page 4. The Commission's Annual Report begins on page 7, and the useful Commission directory appears on page 24. Everything you always wanted to know about the proposed Pennsylvania trout/salmon stamp begins on page 26.



Where They Bitin'?

by Denny Kolakowski

It has always been my contention that when the run-of-the-mill angler puts forth the title of this text, his primary concern is the status of his creel. The problem is that it reeks of fresh rubber or unblemished bamboo more than the watery perfume of trout. These fish chasers might more accurately state their intentions by replacing "Where they bitin'?" with "Where's the beef?"

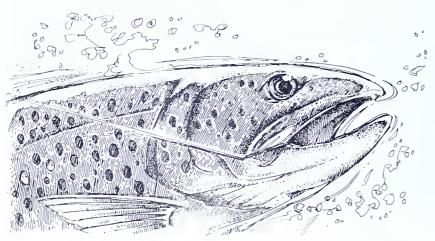
However, I do believe that there does exist an uncountable portion of the fishing poled population that will poke this inquiry for a secret purpose. The hidden pleasure these creekcrawlers seek is the entertainment value in the mere names of their playgrounds. Trout anglers, above all other species, love to wash their ears in the picturesque identities of the streams that might make up the answer to, "Where they bitin"?" You can pick out these characters by noting how the names of their favorite Pennsylvania waters roll off their tongues like the silky cast of an Adams.

Let's face it. This portion of trout fishers is secret romantics. What else could bend an upstanding citizen to invest ankletwisting miles, brave the ficklest weather, subject skin to the bloodsucking bugs that call a trout stream home, swish bootfuls of spring run-off, dissect endless monofilament crow's nests and rise to initiate these and countless other fiascoes at 4 am?

Because the answer lies not in logic, it must be found somewhere in the sizzling of the wild stream, in the charm of a brookie's speckle, in the spider hardwood shadows that bubble on the riffle, in the pink of a rainbow's dance or in the solitude of the dawn still vibrant from the moon's effect.

Well, if you can swallow this type of justification for your sport, it shouldn't be all that difficult to accept the proposition that a stream's name can indeed add to its churning charm. I, for one, smile deep beneath my vest each time I refer to one of my own playmates by name.

The way I see it, God would never have allowed such honorable names for these waterways if they weren't meant to bed down like a spring fawn in an angler's heart and memory. If we were to evolve into mere calculated, calloused fishing machines, our Keystone State creeks would dot the map with cold numbers instead of Blackhawk Run, Chapple Fork or Deerlick.





I doubt that there's a county within range of these words that doesn't wiggle with a Pine, Bear, Deer or Fishing Creek and a Trout, Muddy and North, South, East or West Branch of each. These names are fine standbys for streams that tend to be well-fished but always rewarding. They seem to sprout with old-timers that scoop wooden nets and crank 30-year-old flat-black fly reels as they jaw about past ventures when they shared these banks with fewer people and more fish.

Trout anglers love to wash their ears in the picturesque identities of their favorite stream. The names of their favorite Pennsylvania waterways roll off their tongues like the silky cast of an Adams.



Some runs boil with a more select title and boast names as rich as their catches, like Beaver Meadow, Little Porcupine, Blue Jay and Big Coon creeks; and Hickory River, Turkeyfoot Run and Willow Way. These tags paint dreamy scenes under my fishing hat and pacify the escapist that breathes in this fishing-license holder. These particular streams are not to be fished in a hurry.

My pole has been twitched by browns every bit as crafty in streams with names that conjure up images sadly missed or unappreciated. Such is the fate of Buffalo Creek, Hedgehog Run, Rattlesnake and Big Buzzard Swamp. I fish them a bit more cautiously and never seem to make a full day of it.

A gurgling brook seems to be a fitting monument for military heroes or antique generals. Brown trout swim proudly and dress themselves in full decoration in the runs of Morrison, Dawson, Meade, Douglas, Lone Soldier and Hastings. If I would ever arrive at a six-foot-deep bed with a distinguished career chiseled on my headstone, I'd be honored to have my name carried on by an eternal flow of olive-green and the finned fighters within.

In much the same manner, if I found myself to be of brave Indian descent, I would delight to the tune of the Kinzua, Conewago, Conewango, Shamokin, Cornplanter, Moshannon or Tidioute. Waters of this brand run with the whispering reflections of whitetail and wild turkey. I usually scan among the schools of minnows in the rocky shallows, hoping to focus perhaps on forgotten flint arrowheads.

Accuracy usually suffers most with creek names that make an effort to denote their lengths or distances from other places. I've yet to fish a Two, Four, Six or Eight Mile Run that didn't outgrow its name, although I do admire their stretching techniques and apply them to my sport whenever applicable.

The birthplace of the native brook trout holds a blessed place in the scheme of things. These frothing lifelines weave their patterns through the purest of forest tunnels, slivering their flows with fish that define the word "jewel." The likes of Roaring Fork and Thundershower depict their honesty. Titles of Dutchman Run and Watermill lift the senses as close to heaven as is earthly possible.

Adversely, there are those whose true origins gurgle unbeknownst to all booted brother and sisters and their names don't offer a clue. The stories behind Dead Man's, Coward, White Grave and Mammy Hi Run; Long John, Italian Shanty, Bloody and Fool's Fork remain as much a puzzle as do their lunkers' moody appetites.

My Dad always kept two answers handy for the occasion of "Where they bitin'?" His first was, "They're snappin' at Turtle Creek!" and his second, "They're pullin' 'em outta Cat Head!"

To the latter, any average angler would further inquire "Where's Cat Head?" To which the fox would measure 12 imaginary inches with his hands and proclaim, "about this far from the cat's behind!"

You can tap your own imagination regarding his more earthly term for that particular part of the cat's anatomy. Both Turtle Creek and Cat Head flowed freely in my father's dreams and awaited any naive bait-dangler.

By now you no doubt conclude that I, like a few of you, enjoy just about *any* trout habitat no matter what its namesake. Well, you're probably right. But I do have my personal favorites and their fantasies therein.

Don't ever try to tell me trout anglers can't hold their own as silly romantics.

How to Report a Suspected Violation

by WCO Jim Ammon

What should you do if you witness what you think is a violation of the Fish and Boat Code?

Immediately after witnessing a suspected violation, note as many details as possible. If you have a camera, take pictures of the suspect, his vehicle and/or boat, and anything else that you believe might identify the suspect or prove the violation. The more information you are able to gather and provide to the Fish Commission, the faster a possible violation can be resolved or prosecuted.

Let the 5 W's and an H method assist you in gathering as much information as possible.

• WHO. An accurate physical description of the persons involved is often an essential part of a successful apprehension and prosecution. Try to determine at least the suspect's sex, race, age, weight, height, and color of the hair and eyes. If possible, obtain a description of any vehicles or boats including license or registration numbers and state, make, model, year, color, type, and any other distinguishing features or damage.

More detailed information may include the suspect's name or nickname, address, hair style and length, facial features, posture, build, whether he has a beard, mustache or sideburns, or any unusual physical features.

Also include who else witnessed the suspected violation, and their addresses and phone numbers.

- WHAT. What happened? What was caught, killed or taken? What kind of equipment, tackle, nets, tools, vehicle, boat, or weapons were used? What type of possible violation was committed? What time did it occur? What did the other witnesses say or do? What physical evidence exists? What type of protective clothing did the suspect wear?
- WHERE. Where did the suspected violation occur? Where is the suspect now? Where are the fish, reptiles, boat, etc., located now? Where were you and where were the other witnesses during the commission of the possible violation?



The more information you are able to provide to the Fish Commission, the faster a possible violation can be resolved or prosecuted. However, never risk personal injury to yourself or to others in an attempt to gather information.

- WHEN. When did the apparent violation occur? When was the suspect last seen? When did you first suspect that a violation was being committed?
- WHY. Generally, you will not be able to answer this question because it deals primarily with a suspect's motive for committing the violation. However, if you are able to determine why a violation was committed or why a particular method or tool was used, this information may later prove useful.
- HOW. How was the possible violation committed? How did the suspect get to the scene? How did he get away? How were the tools, equipment, nets, or tackle used? How many other persons assisted in committing the suspected violation? How many fish, reptiles, or amphibians were involved?

Once you have gathered as much information as you can, as soon as possible contact the Fish Commission regional office nearest the location of the possible violation.

Words of caution

Never risk personal injury to yourself or others in an attempt to gather information.

Never attempt to get a sample of a pollutant without wearing gloves. Do not attempt to get a sample if the suspect is wearing any type of protective clothing. If you do attempt to take a sample, stay upwind.

Do not place samples in your refrigerator at home. Place them in a plastic bag and cover them with ice.

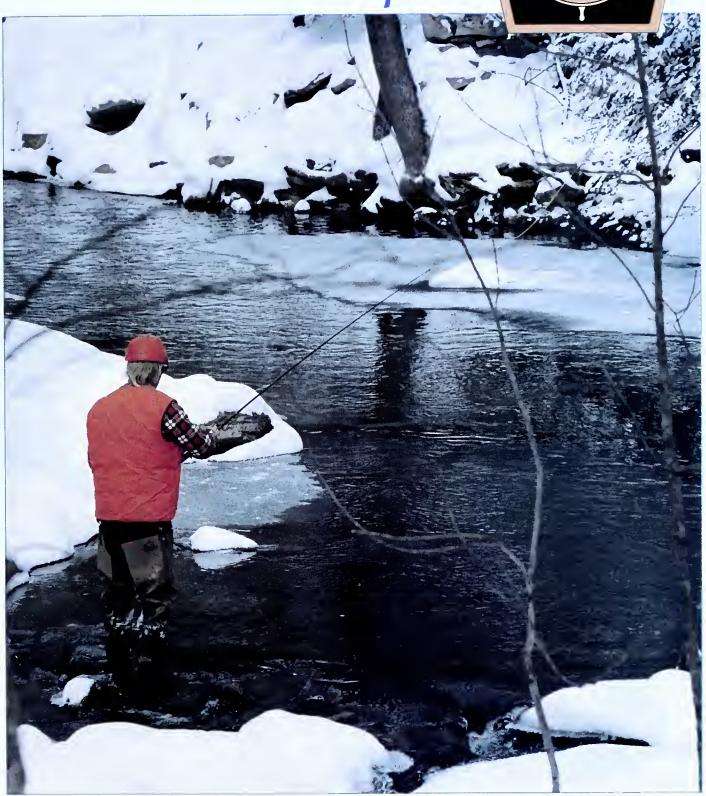
After taking a sample, wash your hands thoroughly before handling food. If your clothes or shoes become contaminated, discard them. Do not attempt to wash them in the family washing machine. Do not walk across carpets or sit on furniture while wearing contaminated shoes or clothes.

Jim Ammon is a waterways conservation officer for Allegheny County

PENNSYLVANIA COMMISSION

Pennsylvania Fish Commission

Annual Report



Fiscal Year 1988 July 1, 1988 - June 30, 1989 On July 18, 1988, the Pennsylvania Fish Commission met for the 182nd time. During that session, Leon Reed was elected president and Dave Coe, vice president for the 1988–89 fiscal year. Under their leadership, the Commission completed a productive year with significant progress in all program areas.

Fisheries management and research efforts are showing results as reports of frequent fishing success were heard from all areas of the Commonwealth. The Commission's programs continued to involve more people as fishing license sales increased nearly two percent and motor boat registrations were up about six percent. Pennsylvania now has more than 1,121,000 licensed fishermen together with an estimated 600,000 to 700,000 youngsters enjoying fishing activities. Furthermore, nearly 280,000 powerboats and an estimated 100,000 non-powered boats used the waters of the Commonwealth.

The Commission's facilities and staff are feeling these increased pressures, as more and more people use these public recreational facilities. The fiscal restraints mandated by inflationary costs and the Commission's fixed revenue structure make it increasingly difficult to meet all public service needs. But because of a dedicated staff's extra effort, the Commission met all high-priority needs and continued a visible public presence.

The Bureau of Education and Information expanded efforts to instruct Pennsylvania's young people through the PLAY program, and implementation of a 75 percent federally funded Keystone Aquatic Resource Education Program. The Commission was also honored by the Pennsylvania Outdoor Writers Association when *Pennsylvania Angler* and *Boat Pennsylvania* editor Art Michaels was given the "Best Magazine Feature" award. Weekly radio programs, new and revised publications, a new Pennsylvania fishing and boating map, several special events and improved media relations helped acquaint the public to the Commission's programs.

A major event occurred on February 1, 1989, when the Philadelphia Electric Company agreed to construct a fish lift at the Conowingo Dam, which when completed will enable American shad once again to reach Pennsylvania waters of the Susquehanna River. This agreement, which involves five different state and federal agencies along with several sportsmen's organizations, provides for completion of the new lift in time for the 1991 spring shad run. Much credit for these successful negotiations goes to the Susquehanna River Anadromous Fish Restoration Committee and the utility companies who helped fund the group's restoration efforts.

Successful operation of the Van Dyke Shad Production Station by the Commission was the major influencing factor in the fishway negotiations. It demonstrated that the American shad population could be restored to the size needed to implement construction of permanent passage facilities at Conowingo Dam.

The Bureau of Property and Facilities Management began preliminary engineering design efforts for installation of a fishway at the Easton Dam on the Lehigh River. The Commission hopes that this step and widespread public interest in this project can serve as the catalyst for the Department of Environmental Resources to schedule this fishway development in the very near future.

The Commission functioned with many new personnel in key positions during the fiscal year. A new legislative liaison and executive assistant, three new bureau directors, seven new division chiefs and a number of other staff and field personnel changes helped from a stronger, more effective working team. The Commission and the sportsmen are fortunate to have such high-quality, dedicated people on board.

Major progress was made in efforts to expand Lake Erie access capabilities for Pennsylvania's fishing and boating public. Plans for development of a major public marina at Northeast through an agreement with a private developer progressed over the past months, while efforts to obtain a purchase option for a future development area at Elk Creek were implemented. The Commission is very optimistic that both projects will move ahead on schedule.

The 1988–89 year was an active, successful year under the leadership of Commission President Leon Reed and Vice President David Coe. Many important program changes were completed, while the groundwork for even greater progress was put into place.

Edward R. Miller Executive Director Pennsylvania Fish Commission

Bureau of Education and Information

The Bureau of Education and Information employs 15 people to carry out its mission of conducting and supporting public education and information efforts related to aquatic resource protection, improvement and management programs. In addition, the bureau strives to enhance public understanding of the wise and safe use of fishing and boating resources. A volunteer corps of 20 people helps in fulfilling this mission.

To reach the anglers and boaters of Pennsylvania, the bureau publishes two magazines, produces statewide news releases and radio programs, provides numerous publications, and sponsors an Angler Recognition Program. To educate all citizens about the importance of our aquatic resources, the bureau sponsors the Keystone Aquatic Resource Education (KARE) program, a youth program called PLAY (Pennsylvania League of Angling Youth), visitor center exhibits, and special events such as "Day at a Hatchery" and "Day at a Lake."

"Drop a Line in '89—Go Fishing and Boating" was the slogan used to promote the rich aquatic resources of the Commonwealth throughout the year.

Pennsylvania Angler

With a circulation of about 50,000, the *Angler* keeps Pennsylvania fishermen up to date on their sport, clues them in to the most desirable fishing waters, educates them on a wide range of conservation subjects, and informs them of Commission decisions and actions. In its 58th year of publication, the *Angler* is still the most visible public information effort of the Fish Commission.

This past year, two of the magazine's contributors won national awards for photos published in the *Angler*, and *Angler* editor Art Michaels won the "Best Magazine Feature" award in the Pennsylvania Outdoor Writers Association annual awards program.

Boat Pennsylvania

About 9,000 boating enthusiasts subscribe to *Boat Pennsylvania*, a quarterly magazine that features articles for everyone from motorboaters to sailors and canoeists. The informative how-to articles, where-to features, safety reminders and other boating features are popular with this group of sporting enthusiasts.

Education

Work began in 1989 to implement the Commission's Keystone Aquatic Resource Education program, a project that uses 75 percent federal funding available under the Dingell-Johnson Act.

One aspect of the program focuses on teacher training and curriculum materials. To carry out this component, facilitators were recruited and trained to conduct 15-hour teacher training workshops. Participants in the workshops, which began in the fall, were introduced to a variety of educational materials for elementary through high school students. Requests for information and training were numerous and additional facilitators were trained to meet the demands.

Education staff attended the first National Aquatic Resource Education Conference in San Antonio last February to present Pennsylvania's program, which has been recognized as a leader in the nation. Staff and the Volunteer E&I Corps also participated in the state Envirothon, as they have for several years.

Memberships in the PLAY program continued to grow and now number almost 7,000. The Volunteer E&I Corps conducted hundreds of programs involving almost 2,000 hours and reaching thousands of people. The Corps is a professional, motivated group who are proud to represent the Commission on their own time.

Media Relations

The Fish Commission continued its history of positive press coverage, which was especially noteworthy in a year of controversial stories relating to proposed merger with the Game Commission and funding needs in the form of a proposed trout/salmon stamp. The second Press Appreciation Day drew 25 outdoors writers who learned more about warmwater fisheries management. The 1989 program, a cooperative effort with the Bureau of State Parks, was held at Prince Gallitzin State Park.

Almost 25,000 inseason trout stocking lists were distributed. Because of

the growing popularity and increased mailing costs, \$1 will be charged for handling and mailing of the inseason list in 1990.

Broadcasting

The Commission's weekly radio program covers subjects that include fish and fishing, boating opportunities, amphibians and reptiles, aquatic environmental concerns and other subjects of interest to anglers, boaters and the general public. One of the radio programs took First Place in the Izaak Walton League's National Outdoor Ethics Contest.

Publications

Several publications were revised this past year and a few new ones were printed. Let's Go Trout Fishing in Pennsylvania and Let's Go Fishing in Pennsylvania Lakes were popular new brochures. Demand was also great for the fishing and boating map, which was reprinted in 1989.

Graphic Services Section

Transfer of the pressman to the Graphic Services Section greatly increased control of Commission publications, with many pamphlets, brochures and flyers now printed inhouse. Purchase of the latest in computer technology has also increased efficiency and expanded the capabilities of the graphic designer.

Fulfillment Section

This section handles the subscriptions for *Pennsylvania Angler* and *Boat Pennsylvania* as well as sending out PLAY packets and thousands of orders for publications and promotional items. In 1989 the Section took on the added responsibility of staffing the Harrisburg office's front window, where visitors can buy licenses, pick up literature and have questions answered.

The Fulfillment staff continues to process Angler Recognition applications and mail out awards, which include new state records.

Public relations

Two major events were held in 1989. "Day at a Hatchery," an open house at the Linesville Fish Culture Station, was a re-creation of a popular event held in the 1970s. It drew about 8,000 people on a cold, windy April Sunday to see fish eggs taken, lake surveys conducted, fish filleting and cooking and other demonstrations.

"Day at a Lake" was held at Lake Arthur in Moraine State Park to commemorate Fish-for-Free Weekend. Visitors learned more about fishing and boating and the unique natural resources of the area by stopping at any of 28 stations. Large crowds gathered whenever the fisheries biologists pulled their nets from the lake and inspected the contents. Youngsters crowded close to see and even get to touch a fish.

Bureau of Law Enforcement

Two resignations and the retirement of Waterways Conservation Officers (WCOs) Shabbick (Wyoming County) and Valentine (Huntingdon County) have created four vacancies in the Bureau's field force. At the same time that these vacancies exist, we continue to receive more requests for officer services and the number of anglers, boaters and other water users continues to increase at a rapid pace, particularly boating activity. Due to a variety of reasons, we will have less than the authorized number of conservation officers until at least the middle of or late in 1990.

In the meantime, emphasis has been placed on boating safety and boat law enforcement. Boat registrations have increased over 250 percent in the last 20 years, and this does not include the tremendous but incalculable numbers of unpowered watercraft such as sailboats, canoes, kayaks and rowboats. Also, the increased popularity of personal watercraft is generating complaints and new uses of our waterways. Many changes in the use of Commonwealth waters have prompted a request for more law enforcement patrols, more laws and regulations, and more waterways markers (buoys). Additionally, boating under the influence of alcohol or drugs and reckless and negligent operation are violations that especially concern us and require much attention. To keep some order on the water, conservation officers and their deputies conducted many patrols in all types of watercraft from canoes to modern, well-equipped I/Os. This year, several new watercraft were purchased to replace a few aging or worn boats.

Various training was provided to Bureau personnel, including all Deputy Waterways Conservation Officers (DW-COs), WCOs, assistant supervisors, supervisors and clerical staff. Training for deputies included mandatory basic train-

ing for those newly appointed, advanced training as required by Commission policy for many deputies, a review of laws, regulations and legal procedures for all DWCOs, as well as the standard CPR and firearms recertifications.

WCOs were provided with a variety of training in addition to CPR and firearms updates. This included recertification in drug and alcohol use detection methods, self-defense training and boat accident investigation techniques. The officers attended this training in smaller groups rather than the entire Bureau at once. This has proven to be more conducive to quality training than a large group. Management personnel attended supervisory training and our clerical staff, EDP (computer) training.

Training has been a vital part of our operation and continues to pay dividends. This has been evident through the reports that we receive each year regarding the use of CPR, first aid and/or water rescue techniques to aid or assist someone in varied situations, some of which are life-threatening. Officers, by using their training skills, save, or assist in saving, a number of lives each year.

Communications are an important part of our unique operation, and we continue to improve the overall capability of the Commission's radio system. Partially completed this year, and to be finished next year, we are providing our conservation officers with the capability of talking to the Game Commission, DER, State Police and County Emergency Systems when acting on emergencies and matters of mutual concern. We very much appreciate the cooperation of these agencies in providing radio service.

Bureau personnel also performed all other regular duties, such as Education and Information work by attending sportsmen's and boating meetings, presenting programs to schools and civic clubs and staffing exhibits at outdoor shows and fairs and other special public relations programs. Other duties included the review of hundreds of mine drainage and waterways encroachment applications. Routine and specialized enforcement actions produced over 9,000 fishing and boating prosecutions and approximately 30,000 warnings, and more than 37,000 boats were boarded. In addition to the normal fishing and boating prosecutions, officers investigated 450 pollutions and took appropriate action where necessary.

Bureau of Property and Facilities Management

Division of Property Services

The Division of Property Services is comprised of three sections: Real Estate, Adopt-a-Stream, and Survey. Division activities include a wide variety of land- and water-related services.

Adopt-a-Stream Section

In the second year of the reorganized Adopt-a-Stream fish habitat improvement program, 17 new streams have been adopted in 1989, with 113 continuing from 1988.

So far in 1989, over 50,000 feet of stream banks have been opened to the angling public, through 10-year easements on new projects.

Twelve new lake fish habitat improvement projects have come on board this year, combined with 16 continuing projects from last year.

The Adopt-a-Stream staff has reviewed over 160 Adopt-a-Stream and fish enhancement applications and processed 22 10-year landowner agreements.

Other activities include one aquatic survey of an adopted water, 16 educational programs, 24 meetings pertaining to the program, 46 layout of stream projects, and supervised construction of 22 stream fish enhancement projects.

Eleven lake fish habitat improvement layouts were completed, and three lake construction projects were supervised.

Four in-service training sessions have been attended by the Adopt-a-Stream staff to further educate and train all personnel.

Real Estate Section

The Real Estate Section acquires land rights for fishing and boating access to the public waters of the Commonwealth, and for administrative purposes. Limited funds for purchases in recent years have resulted in greater reliance on unconventional acquisition methods.

Some of the 1988–89 activities of the Real Estate Section follow:

Acquisition. Peters Mountain Transmitter site, Dauphin County. There are properties under option in Clinton, Erie, Lebanon, Luzerne, Somerset, Dauphin and Columbia counties.

Cooperative agreements. Agreements were being negotiated in Allegheny, Chester, Northumberland, Northampton, Westmoreland and Venango counties.

Forty-four investigations were conducted, and 36 miscellaneous agreements were completed.

Survey Section

The Survey Section is assigned to the Property Services Division, within the Bureau of Property & Facilities Management, and performs work for the sections in that Division.

The type of work required by the Real Estate Section is surveying for possible acquisition of new property, as well as re-surveys of properties where there are possible encroachments and for new or renewed lease lines.

There have been nine surveys done for possible new acquisition, and 10 resurveys for possible encroachment or for the purpose of establishing lease lines.

A large percentage of survey work is done for the Engineering and Technical Services Division, as well as for the Construction and Maintenance Division, also assigned to the Property & Facilities Management Bureau. This type of work consists of surveying for new design (topographical), construction and building stake-outs, location of sewer and utility lines, and as-built surveys after construction. There were 15 surveys done for these two divisions.

The Survey Section is also involved occassionally in the Dam Safety Program. Personnel stake and locate core drill holes and do topo surveys for new spillway and drain designs.

Divisions of Engineering & Technical Services and Construction & Maintenance Services

The work of the Divisions of Engineering & Technical Services and Construction & Maintenance Services is interrelated and therefore described as a combined report. During this fiscal vear their dedicated work forces of skilled engineering, construction and maintenance personnel continued to carry out a major share of the Fish Commission's program to promote and provide for safe public use of recreational waters. The responsibilities toward that program and many other related activities include the development and maintenance of access areas, lakes, hatcheries and administrative facilities; the improvement and restoration of fish migration and water quality; and furnishing engineering and technical services for other Fish Commission activities, local governments and sportsmen's groups.

The access area system consists of over 250 developed properties throughout the state. The following are the most notable projects undertaken during the fiscal year.

East Fredericktown Access, Monongahela River, Fayette County, and Appletree Road Access, N. Branch Susquehanna River, Luzerne County. At each site completed construction of a paved access road, parking lot, and concrete plank surfaced motorboat launching ramp. The new accesses were opened for public use.

Walnut Creek Access, Lake Erie, Erie County. Prepared procurement specifications and contracted repair of asphalt pavement surfaces. Replaced asphalt surface of ramp apron with concrete.

Harveys Lake Access, Luzerne County. Completed erection of prefabricated comfort station building including drilling and analysis of water supply well. Prepared specifications and contracted for well pump and waste water grinder systems.

Proposed Marietta Access, Susquehanna River, Lancaster County. Completed 20-month process of securing local, state and federal permits to construct parking and motorboat launching facilities. The project is scheduled for construction early next year.

Proposed South Pottstown Access, Schuylkill River, Chester County, and Killbuck Access, Ohio River, Allegheny County. Preliminary archaeological survey reports indicate that these projects should have no effect on historical or archaeological resources. Therefore, began securing balance of local, state and federal permits to construct parking and motorboat launching facilities.

Frankford Arsenal Access, Delaware River, Philadelphia County. Rewired parking area lighting circuits and installed time clocks to conserve electricity during low-use periods.

Speers Access, Monongahela River, Washington County. Regraded launching ramp, replaced stone subbase, and installed new concrete planks.

Opossum Lake Access, Cumberland County. Constructed two gravel-surfaced overflow parking areas.

Mahoning Lake Access, Armstrong County. Installed corrugated metal pipe crossdrains and catch basins in access road.

The potential archaeological significance of 20 proposed project sites was being investigated by Clarion University archaeologists.

The following are some of the projects both large and small performed for the Fish Commission's hatchery and administrative facilities.

Bellefonte Fish Culture Station, Centre County. Installed dusk-to-dawn light at upper aerator and new circuit and motor control for oxygen injection pump. Repaired road into hatchhouse at Upper Spring Creek Unit. Constructed concrete bulkheads and a well water supply line for the shad pond system. Began process of securing permits to construct additional shad rearing ponds. Completed rehabilitation of well #1 and installation of new vertical turbine pump. Began process of renewing land application sludge disposal permit.

Benner Spring Fish Culture Station, Centre County. Regraded and seeded storage site. Investigated proposed heat pump installation. Specified and installed automatic starters on main pump motors.

Big Spring Fish Culture Station, Cumberland County. Completed extensive renovations to administration building including interior, surfaces, lighting, entrance doors, windows, restrooms, and heating system. Installed exhaust fan and heater in generator building, time-delay relays on new motor controls, and fuel pump on diesel fuel tank. Began investigation of clarifier subsidence problem.

Corry Fish Culture Station, Erie County. Completed contracted repair of hatchhouse roof. Secured permits to dredge Spencer Run, a small stream that from time to time floods the Annex Unit. Specified new generator to be procured for the Foster Unit pump. Began process of renewing land application sludge disposal permit. Investigated emergency measures to improve treatment of fish waste and overtopping water

Fairview Fish Culture Station, Erie County. Prepared specifications, drawings, and materials list for storage building to be constructed by station personnel.

Huntsdale Fish Culture Station, Cumberland County. Repaired electrical wiring to well #8. Repaired earthen pond banks and concrete block wall in old ice house building. Supervised installation of bird predation and control structures over trout raceways.

Linesville Fish Culture Station, Crawford County. Renovations made to electrical system included new heating units in offices, safety switch on well # 2, underground service to maintenance building and pump house, new panels, motor starters, motors and voltage changeover. Repaired pond banks with sheet piling and riprap and installed waterline. Began process to renew land application sludge disposal permit. Designed and applied for permit to construct hatchhouse effluent treatment system.

Oswayo Fish Culture Station, Potter County. Prepared specifications and procurement request forms for a standby generator system capable of powering the whole station.

Pleasant Gap Fish Culture Station, Centre County. Installed new supply troughs in hatchhouse. Completed construction of new dwelling for the station superintendent. Constructed laterals, manholes and collector line and connected all the station's restroom and wash facilities to the local municipal sewer system. Repaired electrical outlets on raceway. Secured permits and constructed footbridge over a run that crosses the grounds. Completed design of production wastewater treatment facilities and began process securing environmental and other permits required for funding and construction. Continued design of proposed renovations to the station's electrical system. Shop Work. During inclement weather manufactured precast concrete planks for boat ramps. Repaired construction and maintenance equipment. Built shocker tow boats, aluminum raceway screens, replica water wheel to power pump, poster cabinets, large picture frames, signs and many other miscellaneous wood and metal items. Tylersville Unit. Regraded and graveled roads, repaired lightning damage to electrical system and cleaned spring.

Pleasant Mount Fish Culture Station, Wayne County. Repaired underground waterline to aerators, ponds and plumbing. Installed chain link fence and variable speed control on pump motor. Continued preparation of plans and specifications for a fish viewing tank pavilion. Installed alarm system that will monitor raceway and supply trough water levels, water temperature and electric power failures. Began design of improvements to the station foreman dwelling's sewerage system. Completed design and procurement forms for installing power supply circuits to run pond aerators.

Reynoldsdale Fish Culture Station, Bedford County. Reshingled section of hatchhouse roof.

Tionesta Fish Culture Station, Forest County. Completed architectural design, secured approvals and began construction of a multi-purpose building. Continued detailed design of mechanical and electrical systems for the multipurpose building. Prepared specification and procurement forms for generator capable of powering the Tubbs Run Unit and the existing hatchhouse.

Van Dyke Fish Culture Station, Juniata County. Installed two pumps and fabricated trash screens. Began design of new heating system for fish production water.

Regional Law Enforcement and Other Facilities: Sontheast, Speedwell Forge Lake, Lancaster County. Installed fluorescent light fixtures in storage building and basement floor drain in office building. Southcentral, Huntsdale, Cumberland County. Constructed ammunition storage cabinet. Robwood Mtn., Bradford County. Constructed addition to building housing radio relay tower equipment. Harrisburg Headquarters. Installed window wells to correct problem with basement air conditioners. Harrisburg Warehouse. Prepared plans and specifications and remodeled interior to include a print room. Proposed Easton Dam Fish Ladder. As part of the shad restoration program began preliminary engineering study in cooperation with DER for the design and development of a fishway over this Lehigh River dam. Chesapeake/Susquehanna Access Inventory. Began Phase II mapping and inventorying wetlands, endangered species, sensitive soils, fish stocks and potential access sites. Transition Plan to Section 504 of Federal Handicapped Act of 1973. Prepared 10-year fishing pier development plan. Requested from vendors cost and delivery schedules for special portable toilets. Contacted handicapped sportsmen representatives. Kettle Creek Stream Improvement Project. Permits secured and construction scheduled for the next convenient lowwater period.

Pennsylvania Conservation Corps (PCC) Program. By means of this Commonwealth program the Fish Commission furnished on-the-job training to 28 economically disadvantaged youths ages 18 to 24. The PCC trainees were given hands-on work experience by skilled construction trades personnel. The program was conducted at four locations, the Bellefonte, Huntsdale, Pleasant Gap, and Tionesta Fish Culture stations. Some of the work accomplished consisted of installation of pipelines and manholes, fabrication and erection of raceway covers to prevent bird predation, construction of wood forms for concrete bulkheads, and construction of a wood-frame and concrete block building.

In compliance with the National Dam Safety Act, annual inspections were completed and reported for the 29 man-made lakes the Fish Commission controls. Besides computing monitoring data, routine repairs and preventive maintenance, the dam program involved many special tasks. Contracted for the test boring of two dams at Hereford Manor Lakes, Beaver County. Completed design and began process of securing permits to reconstruct the dam for Fords Lake, Lackawanna County. Began modifying outlet works and emergency spillway at Hankins Pond, Wayne County. Began investigation of proposed modifications at Brown's Pond, Warren County to facilitate drainage and fish handling.

The maintenance of the Fish Commission's statewide system of public use facilities continued to be performed by five regionally headquartered maintenance crews.

Bureau of Boating

The mission of the Bureau of Boating is to plan, implement and coordinate a program that ensures safe boating in Pennsylvania.

Administration

During 1989, the Bureau met with representatives of the boating industry, organized clubs, private citizens, and federal and state officials responsible for parts of the Commonwealth's boating program to promote greater coordination and cooperation. Boating Advisory Board meetings were conducted to formulate regulation changes and modifications to operating restrictions on various boating waters. The primary thrust of these regulations was to ease relationships among boaters and ease landowner/boater conflicts.

The increasing presence of personal watercraft is a concern of many citizens of the Commonwealth. The growth of popularity of this type of boat has resulted in cries for banning it from most state waters. The Bureau has attempted to educate operators of these boats concerning their responsibilities and the consequences of their failure to abide by the rules.

Boating Safety and Education Division

The Commission's middle and high school level Boating and Water Safety

Awareness Program continued its revitalization begun the previous year. Interest in the program has blossomed as a result of promotional efforts. In addition, mandatory youth education in Maryland and New Jersey has increased the desire of Pennsylvanians to obtain certification through this 8-hour handson in-water course. Ten instructor workshops throughout the year increased the number of current instructors to 210. These instructors set up programs through 20 schools and 26 conservation clubs, scout clubs, youth groups, and other organizations. These instructors taught over 2,000 students in the Basic Boating and Water Safety Awareness Program.

Teacher workshops were taught through Slippery Rock and Lock Haven universities and discussions continue with several other universities to include this program in their curriculum. The goal of this program is to instill in youth the knowledge, skills and common sense that can make them safer boaters in the years to come.

An elementary level boating and water safety awareness effort has been implemented through the use of a *Boating Fun Activity Book*. Similar to the instructional package used in the middle and high school level program, teachers and youth group leaders who work with younger children are targeted to become trained or aware of the material and information that they can use to make their students water-safe.

In January, the Commission approved the establishment of a grant program to provide up to \$3,000 to local school districts to establish a Boating and Water Safety Program. Three grants totaling \$8,563 were approved. The grants went to Schuylkill Valley, Spring Grove and Upper Adams school districts. Participating schools used the money primarily to buy personal flotation devices, canoes, rescue bags and other educational material.

The Commission's Water Rescue Program continues to grow in popularity. This program was developed in response to a need for training by people involved in water emergencies. Last year, four statewide ice rescue conferences and one statewide water rescue conference were conducted. Some 131 instructors taught 28 water rescue courses certifying more than 850 students

"A life jacket will bring you back . . . alive" was the motto for 140 billboard messages across the state to target the start of National Safe Boat-

ing Week. Over 300,000 brochures were distributed in support of this effort to have an informed boating public. Two new brochures, *Anglers Know Your Limits* and *Ice Safety*, were developed for boaters.

Volunteer instructors and student interns were important to the success of the Boating Safety Education program. These volunteers taught Boating and Water Safety Awareness courses and Water Rescue Programs, revised publications and manned displays. They contributed over 1,400 hours of service.

A seasonal boating education specialist was hired to meet the increasing needs of boaters in western Pennsylvania. His time was primarily spent in public relations and teaching several Water Rescue, Youth Boating Awareness and Basic Boating courses. A second seasonal employee was hired to conduct Boating Safety Programs at state parks, youth camps, conservation schools and similar gatherings of boaters. Over 2,700 people were reached through this program.

Boating accidents

Whether it was the rainy weather, our boating safety efforts or a combination of factors, it was another year of few boating fatalities in the Commonwealth. Twelve fatal accidents have occurred resulting in 14 fatalities. Nine fatalities involved unpowered boats. Five fatalities involved powered boats. High water in the spring was responsible for six of the fatalities. Capsizing small, unpowered boats continues to be the leading cause of fatalities.

Aids to navigation

Because the number of boats on our waterways is increasing, more emphasis has been put on the awareness of floating aids and their messages. The Commission placed over 1,400 aids to navigation across the state. Responsibility for installing, tracking and maintaining these aids is handled by the Commission in cooperation with other agencies such as DER and the U.S. Army Corps of Engineers. Approximately 300 private aids to navigation are also regulated by the Commission.

Boats under 20 feet are required to have capacity plates by January 1, 1990. The number of plates issued has increased from 2,000 during 1988 to over 5,000 in 1989 as boaters begin to comply with the new regulation. It is hoped that through compliance, accidents attributed to overloading and overpowering will decrease as boaters

become aware of the limits of their craft.

Information Systems Division

Computers have assisted the Fish Commission in becoming more efficient. During the year, optical scanners were used to process boat registrations, allowing the Boat Registration Division to maintain an increased workload with a declining number of staff. The technology automated the difficult job of keying information contained on boat registration renewal forms. These cards are now electronically scanned with the data collected from the cards and entered into the Fish Commission's central computer system. Additionally, a system was developed to allow the Fish Commission to act as a sales tax collection agent by accounting for funds collected for this purpose.

To accommodate the increased workload now being performed by computers, the members of the staff of the Information Systems Division was increased. An information systems manager and computer programmer were added to the existing staff.

New technology in the area of automated technology viewed as being cost-effective will continue to be explored and implemented so that the Fish Commission may continue managing its functions in the most efficient, cost-conscious ways possible.

Boat Registration Division

The Boat Registration Division is responsible for the massive task of registering over 270,000 boats each year. In addition to ordinary renewals, the staff processes over 10,000 new boat registrations and more than 60,000 transfers each year. To assist in the handling of routine processing, the Division has implemented automation as much as possible.

Equipment that electronically scans renewal applications was purchased and put to use. With this equipment a single clerk can process some 2,000 applications per hour, work that would have taken five clerks to accomplish manually. The remaining limitations to processing speed are opening the mail and processing checks. Equipment to help automate check processing will be ordered and installed in time for the next registration cycle.

Boat registrations continue to grow at a tremendous rate. The 278,535 boats registered during the 1989-90 cycle represent a 5 percent increase over the previous year's total. This is somewhat lower than previous years, but still

reflects a strong interest in boating in Pennsylvania. Of particular importance is the growth in numbers of boats over 16 feet in length and personal watercraft, which constitute an ever larger percentage of the boats plying the waters of the Commonwealth. This growth is anticipated to continue into the next decade, placing additional strain on our administrative resources as well as our boating resources.

Bureau of Fisheries

Division of Fisheries Management

The Division of Fisheries Management is comprised of field personnel and a central office staff. The field personnel, eight area fisheries managers and their support staff, are assigned on a drainage-area basis. The central office staff includes a clerical group and a rare and endangered species coordinator, a coldwater unit leader and a warmwater unit leader.

The bulk of the Division's time was spent between two Dingell-Johnson Wallop-Breaux Act-funded projects: (1) Fisheries Management Project and (2) the Technical Guidance Project.

The Fisheries Management Project is a plan designed to collect baseline data and information necessary to manage Pennsylvania's diverse fisheries properly. The project includes documentation of the quality and quantity of Pennsylvania's fisheries, the development and implementation of management plans, the dissemination of project data to the angler, and the evaluation of management techniques (such as stocking, habitat manipulation, size and creel limits) vital to optimum development of management plans. A crosssection of the Commonwealth's fisheries resources received attention from management personnel. From frequent water chemistry checks to intensive fish population studies, some 160 streams and rivers from unstocked brook trout streams to most of the major rivers were worked in fiscal year 1988-1989. The 42 reservoirs and lakes worked ranged in size from a small pond to Pymatuning Reservoir.

The Technical Guidance Project is structured to provide guidance to other regulatory bodies, groups, institutions, and individuals on the specific impact that their activity or the activity of others regulated by them has on the resource. It is essential that such bodies, groups, institutions and individuals

(who will affect Pennsylvania's fisheries and fisheries habitat) be provided with sound technically oriented guidance and information that will be useful in making decisions. During the 1988-89 fiscal year, the staff performed a substantial amount of technical guidance service to a variety of requestors. Subjects included cooperative nursery perspective site evaluations, river dredging, hydropower projects on numerous waters, Linn Run acid precip study, mine reclamation, small pond management, herbiciding, fish flesh contamination, fish kill investigations and hearings, landfills, mining permit applications, priority water body surveys, Adopt-a-Stream applications, collecting fish for contaminant analysis, impact of erosion and sedimentation, water allocations, stream encroachments, DER water quality issues, operation of fish passage facilities, lake drawdowns, watershed land use, flood emergency projects, solid waste site development, brine disposal, superfund sites, manure disposal, highway salt, habitat improvement and wetlands encroachments.

The Operation FUTURE Task Force continued to serve as a forum for inhouse communication on ideas for the future management of Commonwealth fishery resources. Emphasis was given to initiatives for managing the Commonwealth's fisheries resources.

In addition to surveying waters and providing technical guidance on the Commonwealth's fisheries, the staff conducted or participated in numerous studies and endeavors. As part of either D-J project, they are intended to provide additional insights into the Commonwealth's fisheries or to undertake implementation of management plans. These special projects include:

- Limestone springs wild trout study. Annual monitoring of trout populations in the special regulation areas of Big Spring Creek and Falling Spring Branch and the biannual effort on Letort Spring Run continued.
- Trophy trout waters study. Trout populations in the Trophy Trout special regulation areas of Fishing Creek, Clinton County; Cedar Run, Tioga and Lycoming counties; and Monocacy Creek, Northampton County, were monitored as part of the annual effort.
- Catch-and-release water. Sampling of the trout population in the unstocked special regulation area of Penns Creek, Mifflin/Union counties, and Bushkill Creek, Northampton County, continued as part of the long-term evaluation.

- Fingerling trout study. Early summer electrofishing occurred in the lower reaches of Letort Spring Run to evaluate the fall stocking of fingerling brown trout.
- Wild trout reassessment efforts. Stream sections managed as wild trout waters (no stocking) were examined to assess the utility of the no-stocking technique with dependence on natural reproductions.
- Seven-inch size limit study. Ongoing assessment of brook trout population abundance and fish length continued on several unstocked streams relative to the increase in minimum size limit implemented in 1983.
- Conservation lakes study. Various types and intensities of fish sampling occurred on lakes managed with elevated size limits for most gamefish species and reduced daily creel limits for sportfish as implemented in January 1987. Angler use-and-harvest information was collected at Cross Creek Lake through late September 1988 and during the May through June period, 1989.

Riverine smallmouth bass project

During the summer and fall of 1988, smallmouth bass populations at numerous river and stream sites throughout the Commonwealth were studied to generate information on evaluating the 10-inch minimum size limit and yearround season and the 1987 implementation of a 15-inch minimum size and two bass daily limit during the spring for flowing waters in the Susquehanna drainage. Population estimates were conducted at several sites including a portion of the Juniata River.

Stocked trout streams use-and-harvest studies

Ten sections of stream and one lake stocked with catchable trout were studied to determine angler use-and-harvest following the stocking. Electrofishing work was done later in the spring to assess the abundance of trout following the peak of spring trout fishing.

Walleye OTC project

Oxytetracycline (OTC) was used to mark walleye fry before stocking in Pymatuning Lake and other waters to distinguish hatchery from wild fry.

• Lake substrate barrier. The placement of a synthetic liner at select sites around Lake Somerset, Somerset County, was initiated during early winter 1989. The effort is an attempt to

maintain vegetation-free areas in an otherwise vegetation-congested waterway.

- Largemouth bass initiative. Studies of largemouth bass in several lakes and reservoirs around the Commonwealth were begun as part of a major effort aimed at designing alternative regulations (size and creel limits) for managing largemouth bass populations. Particularly interesting is density and overall quality of bass populations, especially on waters when sufficient harvest is occurring that the population is less than what the habitat can support.
- Herpetology & endangered species. Staff specialist presented slide lectures on Pennsylvania amphibians, reptiles, fish and aquatic organisms, including those considered endangered, threatened or of indeterminate status, to a variety of audiences; participated in instruction of Deputy Waterways Conservation Officer and Waterways Conservation Officer classes; participated in three Wild Resource Conservation Board meetings; processed 179 scientific collector permits, 475 individual rattlesnake hunter permits, and 13 organized amphibian and reptile hunt permits; responded to numerous correspondence and telephone requests for information about amphibians, reptiles, and endangered species; reviewed new Amphibians and Reptiles of PA publication and several Angler articles; participated in a meeting of the Herpetology Advisory Committee and meetings of the Pennsylvania Biological Survey Steering Committee, NE Nongame Technical Committee and NE Regional Heritage staff; conducted field habitat surveys for species of special concern with PNDI staff from The Nature Conservancy and Western Pennsylvania Conservancy; prepared several contracts for species of special concern life history and status survey work under auspices of the Wild Resource Conservation Fund; and provided various commentary to consulting groups and agencies concerning endangered and threatened species and their habitats.
- Education and information. The staff continued to work with the angling public, with fellow Commission personnel and with individuals from the private and public agency sector. These efforts included:
- 1) Participated at cooperative nursery regional meetings, regional law enforcement (including deputies) meetings, hatchery superintendent meetings, and sessions with administrative staff with presentations on fisheries programs.

2) Sessions with personnel from a crosssection of public and private agencies and organizations having influence on the use or the administration of use of fishery resources.

Staff attended fishing expos, tournaments and camporees to provide displays, demonstrations and opportunities for participants and attendees to learn more about the Fish Commission. Included were Allegheny Sportsmen's Show, Eastern Sport Show at Harrisburg, striped bass tournament at Raystown, Day-at-a-Lake (Lake Arthur), Day-at-a-Hatchery (Linesville Fish Culture Station), and Press Appreciation Day (Glendale Lake).

Newspaper, magazine, radio and TV coverage on a variety of topics ranged from the very specific (management of an individual water) to the very general (entire Fish Commission programs or fisheries available in Pennsylvania).

Numerous lectures, demonstrations and slide presentations to groups ranging from unorganized anglers observing a field survey to formal meetings of statewide organizations to educational groups to civic groups.

Total

-72,945,298

Worked with the Bureau of Education & Information on the preparation of the 1990 license summary booklet. Provided general information on individual species and management programs, reviewed proposed articles, and provided information to outside authors for *Angler* use.

Continued student intern program.

Processed many requests for information by professional and lay individuals, often with detailed responses.

Division of Research

Lake Erie Research Unit

No. of

No. of

No. of

The stabilization of Lake Erie's valuable sport and commercial fish stocks required attentive evaluation of fish communities in central and eastern Lake Erie. Through a cooperative, multi-agency stock assessment program, the Lake Erie Research Unit worked with researchers from the U.S. Fish and Wildlife Service, the Province of Ontario, and the states of Michigan, Ohio and New York. These research efforts analyzed factors that control stock size and variation. As a result, new

management strategies were implemented.

Both walleye and yellow perch populations had been placed under lakewide quota management, and have undergone dramatic recovery and stabilization, while still permitting significant harvest. The Pennsylvania perch stock has increased over 3.2 million harvest-sized fish, and this is complemented with a more stable distribution of year classes.

The vigorous walleye sport fishery has been supported by several large year classes, especially the giant 1984 co-hort. Catches over the last two years have exceeded 60,000 fish, just for the months of July and August! Fortuitous environmental conditions during the spawning period, plus excellent growth of the young, have ensured the stability of Pennsylvania's Lake Erie walleye stock.

Restoration of the eastern Lake Erie lake trout population has been cooperatively undertaken to ensure the continued presence of this Great Lakes native. Because naturally spawned lake trout have been absent from Lake Erie since the 1930s, annual release of 200,000 yearlings produced by the U.S. Fish and Wildlife Service continues to build an adult stock that provides a limited sport fishery.

The ultimate goal is the establishment of a significant adult population that will establish a naturally producing population. Activities designed to increase the lake trout stock size include: (1) Evaluation of sea lamprey control procedures; (2) evaluation of the survival of different lake trout strains, and (3) evaluation of survival of near-shore and offshore releases of juvenile fish.

The Lake Erie Research Unit continued to evaluate the effects of the 1986 lamprey control program. Most recent surveys have demonstrated that lamprey spawning runs have decreased. A significant decline in the number of observed lamprey wounds on coho salmon, steelhead trout, and lake trout is good news!

Research was conducted by the Lake Erie Unit to enhance the survival of Lake Erie coho and steelhead. Yearling coho salmon were tagged with coded wires that differentiated the month and size of the fish on release. Subsequent results indicated that maximum return of full-term adults occurred for lots released in April at an average length of 6.4 inches. This information, along with similar information derived from the evaluation of returns from different genetic strains of steelhead, will be ap-

PENNSYLVANIA FISH COMMISSION Bureau of Fisheries

FISH STOCKING STATISTICS—1988-89 FISCAL YEAR STATE-FEDERAL STOCKING PROGRAM

Coldwater Fisheries

	areas	miles	acres	
	stocked	stocked	stocked	
Number of streams stocked with adult trout Miles of streams stocked with adult trout Acres of streams stocked with adult trout		4,960	23,727	
Number of lakes stocked with adult trout	121		10,938	
Totals	925	4,960	34,665	
Number of coldwater fish (trout and salmon) stocked: Fry — 0 Fingerling— 5,231,648 Adult — 5,257,205 Total — 10,488,853				
Warm/Coolwater Fisheries Number of warm/coolwater areas stocked Miles of warm/coolwater streams stocked Miles of warm/coolwater rivers stocked Acres of warm/coolwater ponds and lakes stocked	122	207 1,004	_88,248_	
Totals	122	1,211	88,248	
Number of warmwater fish stocked: Fry — 70,910,820 Fingerling— 1,862,948 Adult — 171,530				

GRAND TOTAL OF ALL SPECIES STOCKED83,434,151

plied to Lake Erie salmonid stock management with the expectation of improving the stability of these important sport fisheries.

Lake Erie Cooperative Angler Log Program participants continued to supply useful information describing the sport catch of salmonids and other sportfish from Lake Erie. Two full years of angler log data have been collected and tabulated. As more annual information is collected, trends in catch and catch rate statistics will aid in identifying management activities that produce the best fishing.

American shad

The Van Dyke Research Station for Anadromous Fish continued to investigate culture techniques, and to culture American shad as part of the Susquehanna River Anadromous Fish Restoration Committee's (SRAFRC) program. Thirty-eight egg shipments were received during the spring of 1989 for a total of almost 43 million eggs. Egg collections on the Hudson River (a new egg source) totalled 11.2 million eggs. Average egg viability was a record 60.1 percent, resulting in a record production of 22.2 million fry!

Fry were released in the Juniata River (9.1 million), Susquehanna River at Montgomery Ferry (4.0 million), Susquehanna River below Conowingo Dam (7.6 million), Lehigh River (826,000) and Schuylkill River (317,000). An additional 413,000 fry were released into ponds for research or grow-out. Some 74,000 fingerlings were released in the Juniata River during the fall of 1988. Before release, all American shad fry were tagged with tetracycline antibiotics.

Analysis of otoliths from juvenile shad outmigrating during the fall of 1988 indicated that the majority of the run was of hatchery origin. Only four of 228 shad collected at Holtwood Dam were wild, while 8 of 12 collected below Conowingo Dam were wild. Recovery of uniquely marked fry indicated that the early released Virginia and Delaware River fry survived better than did Columbia River fry.

Research conducted at Van Dyke focused on ways to minimize American shad egg mortality, and comparing egg survival in May-Sloanvs. Van Dyke jars. In addition, a cooperative study was initiated with the National Fishery Research and Development Lab at Wellsboro to utilize otolith microstructure to determine the origin of adult shad re-

PENNSYLVANIA FISH COMMISSION Bureau of Fisheries

RECORD OF FISH STOCKED FISCAL YEAR JULY 1, 1988 TO JUNE 30, 1989

SUMMARY OF ALL FISH STOCKED IN THE COMMONWEALTH

TROUT

SPECIES		FINGERLING		ADULT			D TOTAL
	Number	Number	Weight	Number	Weight	NUMBER	WEIGHT
Brook trout	_	920,6 8 4	6,739	1,113,286	505,792	2,033,970	512,531
Brown trout		1,659,622	49,005	2,009,141	925,509	3,668,763	974,514
Rainbow trout		625,500	2 8 ,336	2,060,508	916,685	2,686,008	945,021
Palomino rbw. trout	_		_	61,8 8 6	36,591	61,886	36,591
Lake trout		73,600	678	11,900	9,406	85,500	10,084
Steelhead trout	_	806,000	39,606	_	_	806,000	39,606
TOTAL TROUT	_	4,085,406	124,364	5,256,721	2,393,983	9,342,127	2,518,347
Atlantic salmon		9.510	SALMON 1 253		2 000	9 994	3 253
Atlantic salmon	_	9,510	1,253	484	2,000	9,994	3,253
Coho salmon	_	1,123,480	74,275			1,123,480	74,275
Kokanee salmon		13,252	156	_		13,252	156
TOTAL SALMON		1,146,242	75,684	484	2,000	1,146,726	77,684
FORAGE FISH							
Fathead minnows	_	59 8 ,000	54 8	170,000	713	768,000	1,261
Golden shiner		8,000	24	_		8,000	24
TOTAL FORAGE FISH	_	606,000	5 72	170,000	713	776,000	1,285

turning to the Conowingo Dam.

A milestone in shad restoration was reached with the detection of the first tetracycline marked adult shad to return to the Susquehanna River. The tagged shad was an adult male, collected in the Conowingo Dam fish trap on May 15, 1988.

PENNSYLVANIA FISH COMMISSION FISCAL YEAR JULY 1, 1988 TO JUNE 30, 1989 SUMMARY OF ALL FISH STOCKED IN THE COMMONWEALTH

GAMEFISH

SPECIES FRY FINGERLING ADULT GRAND TOTAL

SPEUIES	<i>[ni</i>]	FINGE	ENLING	AL	ADULI		JIUIAL
	Number	Number	Weight	Number	Weight	NUMBER	WEIGHT
American shad	16,917,820	74,000	1,509	_		16,991,820	1,509
Amur pike (hybrid)	_	3,060	670	_	_	3,060	670
Chain pickerel		27,900	1,470		_	27,900	1,470
Largemouth bass	_	72,9 8 0	6 8 7	100	50	73,080	737
Muskellunge (P)	_	102,533	4, 8 95	_		102,533	4,895
Muskellunge (T)	_	8 5,476	9,349	_		8 5,476	9,349
Northern pike	_	19,100	3,987	_	1	19,100	3,9 8 7
Saugeye	_	48,200	114	_		48,200	114
Smallmouth bass	_	23,000	32		1	23,000	32
Striped bass	200,000	16 8 ,035	459	_		36 8 ,035	459
Striped bass × White bass	1,0 8 5,000	500	750	_	_	1,0 8 5,500	750
Walleye	51,708,000	516,814	2,3 8 4	_		52,224, 8 14	2,384
TOTAL GAMEFISH	69,910,820	1,141,598	26,306	100	50	71,052,518	26,35 6
			PANFISH	1			
Black crappie	_	35,900	161	775	350	36,675	511
Bluegill	-	12,500	25	655	174	13,155	199
Channel catfish	_	50,400	1,021	_	_	50,400	1,021
White bass	1,000,000	_	_		_	1,000,000	
White catfish	_	16,550	166	_		16,550	166
TOTAL PANFISH	1,000,000	115,350	1,37 3	1,430	524	1,116,780	1,897
GRAND TOTAL	70,910,820	7.094.596	228,299	5,428,735	2,397,270	83,434,151	2,625,569

Amur pike program

During October 1988, over 3,000 Amur pike fingerlings averaging 11 inches in length were released into Glendale Lake, Cambria County. All fish received a right pelvic fin clip before release. Approximately 145 of the most Amur-like fish were maintained as future brood fish. Twenty-six Amurs were sent to Dr. Irv Kornfield of the University of Maine for use in esocid genetics studies. During spring 1989, thirty females were spawned and resultant fish did well. At the end of June, approximately 2,100 remained on intensive culture. Surviving fish will receive a left pectoral fin clip and were stocked into Glendale Lake during September and October of 1989.

Fish culture research initiatives

Research efforts directed toward resolving problems with the culture of coolwater fishes included the following studies: 1) Intensive culture of walleye fry in circular tanks; 2) Effect of age/ size at stocking on the survival of walleye in ¹/₂-acre research ponds; 3) Refinement of OTC (oxytetracycline) feed tag for ponded American shad fingerlings at Benner Spring and Upper Spring Creek; 4) Use of grass carp to control vegetation, particularly filamentous algae, in hatchery rearing ponds at Benner Spring and Upper Spring Creek; 5) Cooperative study with the Linesville Fish Culture Station and the Fisheries Management Division to physiologically mark the otoliths (ear stones) of walleye fry using OTC oxytetracycline; and 6) Standardization of culture procedures for tiger muskellunge, northern pike and Amur pike was initiated to work the "bugs" out of the new Coolwater Research Wet Lab.

Permit coordination

Fish culture stations that were granted the combined Department of Environmental Resources/National Pollutant Discharge Elimination System (DER/NPDES) industrial waste permits were monitored monthly in accordance with their effluent discharge permit requirements. These fish culture facilities include Bellefonte, Benner Spring, Big Spring, Cedar Spring, Corry, Fairview, Huntsdale, Linesville, Oswayo, Pleasant Gap, Pleasant Mount, Reynoldsdale, Tionesta, Tylersville, Union City, Upper Spring Creek and Van Dyke. Applications to renew DER/NPDES water quality permits were submitted for the Cedar Spring

and Tylersville facilities.

Water quality laboratory

During fiscal year 1988, a total of 1,657 water, sludge, and soil samples were submitted to the Benner Spring Water Quality Lab for analysis. These samples required 4,678 physical, chemical and bacteriological tests. At an average commercial fee of \$12 per test (low estimate), the analyses would cost approximately \$56,136.

Brood stock development

A brood stock selection program has been developed that involves the systematic spawning of selected pairs (one male X one female) of brood fish and producing families which are then cvaluated separately. An individual egg jar incubation unit was developed for fish culture programs, and four such units were placed into operation at the Big Spring, Huntsdale, Benner Spring and Oswayo Fish Culture stations. Program guidance and training in brood stock selection was given to personnel at each facility, and fish culturists have become familiar with the brood stock selection process.

Research continued on the development of the following five salmonid strains: 1) An IPN virus-resistant brook trout strain; 2) A brook trout strain that will be resistant to the bacterial disease furunculosis; 3) A spring spawned rainbow trout that will give added growth by spawning earlier in the year; 4) A rainbow trout strain that spawns twice a year, developed in cooperation with USFWS geneticists; and 5) An IPN virus-resistant brown trout that is also resistant to the bacterial disease furunculosis.

Fish health management

In 1985 the Fish Commission adopted a Policy on Fish Health Management and Disease Control. It included an operating procedure relative to fish transfer and disease control with the goal of reducing or eliminating serious fish diseases. The adoption of this policy has resulted in increased involvement of the Pathology Unit in evaluating the suitability of proposed fish, fish egg, and fish gamete transfers. Included in the disease control effort is an annual hatchery inspection program to detect the presence of certifiable fish pathogens at 14 production facilities. The results of the inspection are then used to develop an accurate hatchery disease classification.

Diagnostic services

During fiscal year 1988, a total of 107 pathological investigations were conducted to assist management staff at Fish Commission and Cooperative Nursery production facilities. A total of 200 disorders were detected during these investigations. Gill disease, systemic viral and bacterial infections, and external parasites were the most commonly detected pathological problems.

Office of Chief Counsel and Environmental Review

The Office of Chief Counsel and Environmental Review provides legal and environmental services to the Fish Commission. The office also provides liaison between the Fish Commission and other Pennsylvania agencies.

Chief counsel

The Fish Commission's chief counsel, Dennis Guise, Esq., serves as legal advisor to the Commission, the executive director and the staff of the Fish Commission. The chief counsel reviews a wide variety of legal problems and matters. Because the Fish Commission is an independent agency, he has wideranging responsibilities under the Commonwealth Attorneys Act of 1980.

The chief counsel represents the Fish Commission in administrative litigation before the Environmental Hearing Board, the Board of Property, Civil Service Commission, Board of Claims, the Board of Finance and Revenue, and the Human Relations Commission. The chief counsel also coordinates court litigation with the Office of the Attorney General, and represents the Commission before Commonwealth Court in appropriate cases.

The chief counsel provides lcgal reviews for all Fish Commission regulations, contracts, deeds and lcases. He supervises the Commission's environmental and technical functions. During 1989, the Commission made arrangements for its chief counsel to serve on a full-time basis. Administrative support of various legal, regulatory and personnel functions was enhanced by the assignment of an administrative assistant to the Office of Chief Counsel.

Division of Environmental Services

Under the leadership of John Arway, the Division of Environmental Services

(DES) continues to provide technical assistance on all types of environmental issues to various Fish Commission bureaus as well as many other state and federal agencies and private citizen groups. The Fish Commission's responsibility in providing this type of assistance has increased over the years because of growing public concern about protecting and conserving our environmental resources.

Public laws and regulations promulgated since the mid-1970s contain provisions requiring coordination with state and federal resource agencies so that impacts to fish and wildlife resources may be avoided, minimized or mitigated. The Fish Commission now has a group of highly trained specialists to respond to almost any type of environmental problem. DES staff continually supply advice on topics such as: the toxic properties of today's hazardous chemicals and their effects on various species and lifestages of fish and other aquatic life; instream flow needs to ensure that streams continue to flow during dry weather despite intensive use of water resources for water supply and hydropower development; impacts to receiving streams from coal and non-coal mining, sand and gravel dredging, peat extraction, oil and gas development, highway construction and logging; physical impacts to stream and wetland habitats as a result of illegal and unpermitted land development; the effects of acid precipitation on Commonwealth waters and the treatment of waters to ameliorate the impacts of acid rain.

The Division's statewide responsibility requires regular coordination with almost every regulatory bureau within the Department of Environmental Resources, and many federal agencies such as the U.S. Environmental Protection Agency, Army Corps of Engineers. Soil Conservation Service, Geological Survey, Forest Service, Federal Energy Regulatory Commission and Fish and Wildlife Service. Permit review responsibilities reflected in the following table consume a tremendous amount of staff time. However, it is recognized that time devoted to planning various development projects properly may be subtracted from time required to assess impacts caused by uninformed developers.

The following summary details the actual number of permit applications reviewed by Division staff in fiscal year 1988–89:

Project Reviews	No.
DER stream and wetland	1,077
encroachment	
DER sewerage	140
DER mine drainage	357
DER solid waste	37
DER water allocations	59
PennDOT projects	355
FERC hydropower projects	59
COE 404 public notices	125
DER flood control projects	22

Many of these reviews are routine and the projects do not pose significant impacts to biological resources in receiving streams. However, there are other projects that receive much public attention. The following list contains examples of the more controversial permit review and enforcement cases Division staff have been involved with in fiscal year 1988–89:

Permit Reviews

Dock Street Dam Hydro, Dauphin County

Youghiogheny Hydro, Somerset County

Ohio, Allegheny and Monongahela River Hydro Projects

Pocono Wetlands

Airport Parkway Southern Expressway, Allegheny County

Point Pleasant Division, Bucks County

Seven Springs Resort, Somerset County

Warner Company Quarry, Bucks County

Enforcement Cases

Ashland Oil Spill

Fiore Landfill, Allegheny County Benjamin Coal Company Bankruptcy

North Cambria Fuel Company, Westmoreland County NSM Coal Company, Somerset County Hog Farms, Perry County

NGK Metals, Berks County Brace Wetland Fill, Erie County

Each year the Division also takes on selected projects designed to enhance each program biologist's knowledge of his area of responsibility. Examples include a cooperative study with EPA to test the toxicity of brines (wastewaters from oil and gas development), a monitoring study on Clover Creek, Blair County, to evaluate the effectiveness of an SCS program of erosion control and manure management, a wetted perimeter study on Connoquenessing Creek and Thorn Run, Butler County, to determine instream flow needs, a highway

runoff monitoring study in several watersheds across the Commonwealth to assess the impacts of runoff on aquatic life, another EPA cooperative study to evaluate the efficiency of natural wetlands in treating acid mine drainage, and an associated study evaluating the effectiveness of constructed wetlands in treating acid mine drainage to permit effluent limits.

Environmental and Technical Liaison

Robert Hesser serves as the Fish Commission's environmental and technical liaison. He provides environmental and technical liaison functions with a host of other state and federal agencies on a wide variety of subjects including fish management, water quality, fish contaminants and pesticide use. Among these agencies are the Susquehanna and Delaware River Basin commissions; the Chesapeake Bay Living Resources Team for the Chesapeake Bay; the Pennsylvania departments of Health, Environmental Resources and Agriculture; and the U.S. Fish and Wildlife Service and National Marine Fisheries Service.

The Environmental and Technical Liaison represents the Commission on a number of technical committees overseeing the restoration of American shad, striped bass and other species in both the Delaware and Susquehanna River basins. In this capacity he serves as chairman of the Delaware Basin's Fish and Wildlife Management Cooperative's Technical Committee and serves as a member of two technical committees on the Susquehanna: the Susquehanna River Technical Committee, formed by the administrative law judge of the Federal Energy Regulatory Commission, and the technical committee of the Susquehanna River Anadromous Fish Restoration Committee.

In addition, Mr. Hesser serves as alternate for the executive director on the Mid-Atlantic Fishery Management Council and as a member of several committees of the Atlantic States Marine Fisheries Commission. These include the Advisory Committee, and Statistical and Scientific Committee for Shad and River Herring, Striped Bass and Atlantic Sturgeon. One of the primary functions of these committees is to formulate management plans for the various interstate species named, for adoption by the Atlantic coastal states.

Mr. Hesser also has served on the Pennsylvania Pesticide Advisory Board since its inception. This board, which is comprised of members appointed by the governor, advises the secretary of agriculture and the Department concerning rules and regulations and other pertinent pesticide issues as provided by the Pennsylvania Pesticide Law.

One of the more demanding functions of this position is the review and approval, on behalf of the Commission, of all aquatic herbicide applications for permit to treat ponds and lakes in the Commonwealth. Mr. Hesser has written several Commission publications on this subject and provides advice on the use of aquatic herbicides in ponds and lakes. He also provides advice in general fish pond management and specialized training for individuals needing Department of Agriculture certification for purchasing and applying aquatic herbicides.

Bureau of Administrative Services

The Bureau of Administrative Services provides issuance of fishing licenses, purchasing and procurement of goods and services, payroll and personnel, fiscal planning, budget preparation, automotive fleet services, telecommunications, record keeping, computer services, issuance of special permits and licenses, warehousing, duplicating and mailroom services, federal aid coordination, inventory record-keeping, training, messenger services and other activities and functions needed to support the programs of the Fish Commission.

Federal Aid Section

The section on federal aid coordination prepared and submitted formal documentation for federal assistance on three new projects* and six new segments to existing projects** during the fiscal year ending June 30, 1989. Total reimbursements for all federal programs projects were \$4,512,497, an increase of \$1,126,696, or 33.28 percent over FY 1987-88 reimbursements, which were \$3,385,801. Reimbursements were distributed as follows:

Fish Fund \$3,880,509 +42.96 percent
Boat Fund 631,988 - 5.87 percent
Fish & Boat \$4,512,497 +33.28 percent
Funds (total agency)

CLASSIFICATION OF EXPENDITURES AND COMMITMENTS (POSTED JULY 1, 1987 TO JUNE 30, 1988 FROM CURRENT APPROPRIATIONS)

	Charged To	Charged To	Combined, Funds Expenditures and
	FISH FUND	BOAT FUND	Commitments
PERSONNEL SERVICES			
Salaries and Wages			
Employee Benefits—State Share		705,559	4,491,562
PERSONNEL SERVICES TOTAL	\$ 13,089,726	\$ 2,642,171	\$ 15,731,897
OPERATIONAL EXPENSES			.
Fish FoodVehicle Maintenance—Gasoline, Oil,	\$ 1,161,249	\$ 0	\$ 1,161,249
Repairs, etc	327,558	108,417	435,975
Printing and Advertising	406,107	195,677	601,784
Utilities (Electricity, Heat, Water) Payment to Other State Agencies for	597,529	27,834	625,363
Services Rendered	217,548	20,196	237,744
Maintenance Materials and Supplies	·	ŕ	
for Construction, Repairs and	047.044	00.000	000 507
Upkeep Postage	317,311 142,852	82,226 196,770	399,537 339,622
Telephone Expenses	145,587	53,004	198,591
Travel Expenses	195,485	70,955	266,440
Maintenance and Rental of Office, Copying Tabulation and EDP Equip	202,784	65,201	267,985
Contracted Maintenance Services of	202,704	03,201	207,303
PFC Buildings and Grounds	114,998	46,796	161,794
Rental of Buildings for Office and	140 140	92,244	240,392
Storage Contracted Specialized Services	148,148	32,244	240,392
(Legal, Consulting, etc.)	593,644	224,069	817,713
Purchase of Uniforms, Clothing,	70.404	00.040	100.070
Footwear Special Conference Expenses	79, 161 39,135	22,918 1 9,915	102,079 59,050
Laboratory Supplies, Drugs, and	00,100	10,010	00,000
Chemicals	25,052	0	25,052
Insurance—Liability, Surety, Fidelity . Other Supplies (Office, Educational,	37,616	14,967	52,583
etc.) and Services	379,578	93,569	473,047
OPERATIONAL EXPENSES TOTAL			
FIXED ASSETS			
(Capital Improvements)			
Purchase of Automobiles, Trucks, and			
Watercraft	\$ 487,814	\$ 369,308	\$ 857,122
Access Area Development and Improvements to Lakes and Streams	221,980	39,127	261, 1 07
Building Improvements to New and	221,300	00,127	201,107
Existing Structures	386,069	1,747	387,816
Machinery and Equipment Radio Equipment Purchases	413,295 149,293	62,808 64,570	476,103 213,863
Purchases of EDP Equipment	187,154	64,570 135,493	322,647
Office Equipment, Furniture, and		·	
Furnishings	48,122	10,188	58,310
Land Acquisitions		9,151 \$ 692,392	24,454 \$ 2,601,422
GRANTS AND SUBSIDIES		1,425	53,638
Pennsylvania Fish Commission			
General Operations Total	20,182,211	4,670,746	24,852,957
Department of General Services— General State Authority Rentals	6,212	197	6,409
TOTAL EXPENDITURES AND	0,212	197	0,403
COMMITMENTS	\$ 20,188,423	\$ 4,670,943	\$ 24,859,366

The principal sources of this fiscal year's increased reimbursements were again due mainly to increased Dingell-Johnson Act funds, through its Wallop-Breaux amendment (+\$1,189,720). This more than offset net decreases of \$63,024 in other federally assisted programs.

Fishing License Section

This section appoints and supervises 1,800 issuing agents, which include county treasurers and private businesses in Pennsylvania, New Jersey and Ohio. Monthly reports are received and audited with revenue deposited in the Fish Fund by the state treasurer.

Fishing licenses issued in fiscal year 1988–89 include:

Total	1,125,133
Free	1,530
Senior lifetime	14,677
Tourist	16,974
Senior resident	37,908
Non-resident	66,026
Resident	988,018
meruue.	

Personnel Section

The Personnel Section develops and implements human resources management programs for Fish Commission employees, including recruitment and selection, classification and pay, employee benefits, personnel transactions, training, safety, affirmative action and labor relations.

The following are some of the highlights of the activities of the Personnel Section during the 1988-89 fiscal year:

- Recruitment and selection. On December 16, 1988, the fisheries technician and fish culturist examination program was announced. Successful applicants are on the eligible list for two years. In addition, key management positions for the agency were filled including the information systems manager and the personnel officer.
- Classification and pay. Participated in the review and implemented within the Fish Commission the new Commonwealth Classification and Pay Plan.
- Safety. Reviewed the progress on the implementation of right-to-know reporting requirements and developed strategy for attaining agency-wide compliance.

• Complement control. Conducted a review and analysis of complement needs and vacancy utilization, and developed a plan for more efficient use of available positions.

• **Benefits.** Developed formal reporting procedures for job-related injuries.

- Transactions. Approximately 3,322 transactions were processed during fiscal year 1988-89.
- Pennsylvania Conservation Corps. Effective June 30, 1989, all projects that were part of this program were officially completed.

Purchasing Sections

The Purchasing Sections (both Harrisburg and Pleasant Gap) procure a wide range of commodities and services used by Fish Commission personnel. These sections maintain and process invoices, write specifications for commodities and services, and solicit and handle bid openings.

These offices are continuing their efforts to upgrade and computerize some of their office functions. In the future, the manual task of logging all invoices, documents and contracts that come into the offices will be entered into the computer, thereby making the retrieval of information easier.

Warehouse Section

The Harrisburg warehouse is currently being stocked and organized in an efficient manner. This facility will enable the Fish Commission to consolidate a wide range of commodities under one roof that were previously housed in several locations. The warehouse will soon have a computer on which a modern inventory system will be programmed and interfaced with the purchasing system.

Offices Services Section

This section is responsible for onecolor offset printing, collating, binding, paper-cutting, and mail and messenger services.

Automotive and Telecommunications Section

Thirty-eight new cars and trucks were purchased during the fiscal year. These vehicles were used to replace older, high-mileage pieces of equipment that were surplused and sold at the state auction. The replacement of these older vehicles with modern, more efficient equipment is helping to keep the Com-

Documentation was submitted during the year ing projects:	on	the follow	ing r	new and exist-
ing projects.	F	Planned Costs		Anticipated imbursement
Fish and Wildlife Restoration Act (D-J) **D-J Maintenance (F-30-D-24) **Fisheries Management Project (F-57-R-12) **Lake Erie Anadromous Salmonids (F-62-R-4)	\$ 2	785,000 2,463,728 702,000	\$	588,750 1,847,796 526,500
**Delaware River Striped Bass Restoration (F-66-R-3) *Appletree Road Access Area (F-68-D-1) *Keystone Aquatic Resources Education		35,000 62,077		26,250 46,558
(KARE) (F-69-E-1)	\$4	191,238 , 239,043	\$	143,428 3,179,282
Fishery Conservation and Management Act of 1976 (NMFS) **Mid-Atlantic Fishery Management Council (MAFMC-89-5)	\$	6,692 6,692	\$ \$	6,692 6,692
Surface Mining Control and Reclamation Act of 1977 (OSM) **Small Operator's Assistance (SOAP) Program (ME-87724)	\$ \$	15,000 15,000	\$ \$	15,000
U.S. Department of Transportation (U.S. Coast Guard—Boating Safety) *Boating Safety Program (Federal Fiscal Year 1989)—(19.01.42)	\$	630,276	\$	15,000 630,276
	\$	630,276	\$	630,276
GRAND TOTALS	\$	4,891,011	\$	3,831,250

mission's fleet operating cost down, even though the price of fuel and repairs continues to rise.

The Commission continues to purchase telephone systems for its law enforcement offices and fish culture stations. It is projected that the purchased systems will ultimately be less costly than the presently leased systems, when compared over a five-year period. Also, the Commission has considered adding facsimile (FAX) service between the fish culture stations, area fisheries management offices and their headquarters. The FAX machines will provide the Commission with a more timely and convenient flow of vital information.

The Commission is also in the process of updating law enforcement's radio system with the acquisition of programmable, high-band radios. The Commission will then have the capability to communicate with the Game Commission, State Police and the Department of Environmental Resources when working in areas of mutual concern or during emergencies. This and other future radio improvements will increase service to the citizens of Pennsylvania, particularly its anglers and boaters.

Miscellaneous Licenses and Permits Section

The following licenses and permits were received, distributed and issued by this section:

Mine ductions	200
Mine drainage	390
Regulated fishing lake	240
Artificial propagating	165
Live bait dealer	993
Live fish dealer	34
Resident transportation	103
Non-resident dealer	16
Net permits	69
Drawdown permits	151
Dynamite permits	37
Scientific collector's	
permits	179
Total	2,377

Sand and gravel royalties

During fiscal year 1988-89, the Fish Commission received \$286,346 in royalty payments from dredging companies operating on Commonwealth waters. The amount represents a decrease of \$152 in receipts collected in fiscal year 1987-88.

Since the passage of Act 225, approved July 31, 1970, the Fish Commission has received \$4,711,730 in revenue from this income category.

FISH FUND EXPENDITURES AND COMMITMENTS BY DIVISION POSTED JULY 1, 1988 TO JUNE 30, 1989

Executive Office	\$ 238,798
Bureau of Education and Information	1,005,098
Bureau of Administrative Services	1,522,473
Bureau of Fisheries—Administration	433,949
Fisheries Management	1,182,993
Fisheries Research	653,436
Warmwater/Coolwater Propagation	2,338,776
Trout Production	5,480,751
Bureau of Property and Facilities Management	165,879
Architecture & Engineering Administration	108,312
Engineering Section	142,269
Architecture Section	84,407
Special Projects	32,997
Dam Safety Section	91,931
Property Services	264,649
Construction & Maintenance Administration	73,416
Construction Section	1,110,266
Property Maintenance Section	686,184
Bureau of Boating	177,055
Law Enforcement	3,645,241
Chief Counsel	115,851
Environmental Services	298,823
Comptroller	328,657
Fish Fund General Operations Total	20,182,211
Department of General Services—General State Authority Rentals	6,212
· ·	· ·
Total Expenditures and Commitments	<i>\$20,188,423</i>

FISH FUND STATEMENT OF UNRESERVED FUND BALANCE FOR THE FISCAL YEAR ENDED JUNE 30, 1989

Fund Balance—Unreserved/Undesignated, June 30, 1988
Licenses & Fees \$ 776
Miscellaneous Revenue
Interest on Short Term Investments 104,934
Due from Federal Gov't. (Grants) 355,047
Due from Other Funds
Total Revenue accrued but not received as of 06/30/89
Total Revenue Earned During 1988–8919,745,295Lapses from prior year appropriations512,177
Unreserved/Undesignated Fund Balance
Before Commitments and Expenditures
Deduct: Current Year Expenditures and Commitments posted from 07/01/88 through 06/30/89 20,188,423 Reversal of Commitment and Expenditure accrual
for 1987–88
06/30/89 expenditure accruals (1,421,051)
Total Expenditures and Commitments incurred for fiscal year year 1988–89 20,273,703
Fund Balance—Unreserved/Undesignated, 06/30/89 \$ 10,995,751

FISH FUND REVENUE DEPOSITED JULY 1, 1988 TO JUNE 30, 1989

DEI GGITED GGET 1, 1300 10 GGITE GG, 1303		
LICENSES AND FEES		
Resident Fishing—Regular	\$	11,856,215
Resident Fishing—Senior		75,816
Lifetime Fishing—Senior Residents		146,769
Non-Resident Fishing		1,320,527
Tourist Fishing		254,611
PA League of Angling Youth		11,693
Fishing Lake Licenses		13,075
Miscellaneous Permits		16,069
Commercial Hatchery		8,060
Scientific Collectors' Permits		4,800
Lake Erie H. R. Stackhouse Facilities User		2,900
		6,203
Total Licenses and Fees	\$	13,716,738
FINES AND PENALTIES		
Fish Law Fines	\$	181,149
MISCELLANEOUS REVENUE		,
Interest on Securities & Denosite	Φ	826,864
Interest on Securities & Deposits	Ф	272,539
Miscellaneous Revenue		91,980
Reimbursement of Van Dyke Shad Station Operations Costs		132,906
Refund of Expenditures Not Crediting an Appropriation		4,660
Sale of Pennsylvania Angler		287,680
Restitution for Fish Killed		344,926
Strs Inventory Receipts—Deputy Waterways Patrolmen		4,563
Rental of Fish Commission Property		17,446
Sale of Patches		118
Sale of Recreational Items		3,916
Sale of Publications		24,772
Sale of Unserviceable Property		6,712
Royalty Payments		9,494
In-Ĺieu of Payments for Fishways		75,000
Total Miscellaneous Revenue	\$	2,103,576
TOTAL NONTAX REVENUE	\$	16,001,463
AUGMENTATIONS	•	10,001,100
Federal Aid	\$	2 000 500
Sale of Vehicles	Φ	3,880,508 44,975
Reimbursement/PA Conservation Corp.		44,975
·		3,974,008
Total Augmenations		, ,
TOTAL REVENUE IN FISH FUND	. <u>\$</u>	19,975,471

BOAT FUND EXPENDITURES AND COMMITMENTS BY DIVISION POSTED JULY 1, 1988 TO JUNE 30, 1989

Executive Office	\$ 31,858
Bureau of Education and Information	331,559
Bureau of Administrative Services	285,142
Bureau of Property & Facilities Management	37,198
Architecture & Engineering Administration	42,382
Engineering Section	55,525
Architecture Section	34,342
Special Projects	13,317
Dam Safety Section	38,144
Property Services	76,190
Construction & Maintenance Administration	29,686
Construction Section	304,396
Property Maintenance Section	426,532
Bureau of Boating	999,815
Law Enforcement	1,874,681
Chief Counsel	7,815
Comptroller	82,164
	\$ 4,670,746
Department of General Services—General State Authority Rentals	197
Total Expenditures and Commitments	\$ 4,670,943
-	

Comptroller's Report

The fiscal year 1988-89 balance sheets and statements of unreserved fund balance for the Fish and Boat Funds were prepared in accordance with Generally Accepted Accounting Principles (GAAP).

All other statements included with this report were prepared on a cash basis of accounting combined with an encumbrance budgetary system and as such are consistent with those of the previous year.

Fish Fund

Actual revenue deposited in the Fish Fund during the 1988-89 fiscal year was \$19,975,471, an increase of \$1,433,474, or 8 percent, over actual deposits in 1987-88 fiscal year. Federal aid reimbursements increased \$1,166,095. Resident and non-resident fishing licenses increased \$249,916 over last year's actual receipts. Interest on securities and deposits increased \$151,241 over last year's earnings and restitution for fish killed (primarily from Chemlawn and Delaware County Solid Waste Authority) increased \$96,551. Offsetting these increases were decreases in royalty payments, down \$92,162 because of litigation payments received in fiscal year 1987-88 from Amoco for Somerset Lake, with no income reported for the 1988-89 fiscal year. In addition, Van Dyke Shad Station reimbursement of operating costs decreased \$39,911.

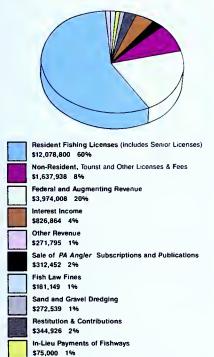
Expenditures and commitments for the Fish Fund totaled \$20,188,423 in 1988-89 fiscal year, an increase of \$1,862,243, or 10 percent, over last year's total. Significant increases were reported for salaries and wages, up \$651,303; fish food, up \$309,758; machinery and equipment, up \$198,391; building and structure purchases, up \$148,727; contracted specialized services, up \$141,027; developments and improvements to lakes and streams, up \$118,687; and printing and advertising costs, up \$92,322. Offsetting these increases were decreases in maintenance services of buildings and grounds, down \$76,827; insurance, down \$62,587; vehicle maintenance, down \$30,759; telephone costs, down \$30,065; and utility costs, down \$29,936.

The June 30, 1989, unreserved/undesignated fund balance prepared on a GAAP basis was \$10,995,751, a \$16,231 decrease from last year's balance.

Boat Fund

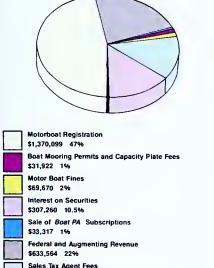
Actual revenue deposited in the Boat Fund for 1988-89 fiscal year was \$2,927,988, a \$940,053 or 24 percent decrease from last year's total. Included in this total is \$459,781 in sales tax collections due to the General Fund. Motorboat registrations increased \$50,349, or 5 percent, over last year's receipts. Offsetting these increases was a \$1,402,316 decrease in liquid fuels tax, which has not been received due to litigation and a \$35,923 decrease in

FISH FUND REVENUE
DEPOSITED JULY 1, 1988 TO JUNE 30, 1989



TOTAL \$19,975,471

BOAT FUND REVENUE
DEPOSITED JULY 1, 1988 TO JUNE 30, 1989



TOTAL \$2,927,988

\$471,022 16%

Other Revenue

\$11,134 .5%

Coast Guard grants.

Expenditures and commitments total \$4,670,943, a \$152,958 or 3 percent increase over last year's total. Increases in expenditures were reported for watercraft purchases, up \$166,692; printing and advertising, up \$30,777; specialized services, up \$26,256; and postage costs, up \$21,678. Offsetting these increases

were salaries and wages, down \$174,057; travel, down \$22,254; maintenance costs, down \$21,281; and insurance costs, down \$20,811.

The June 30, 1989, unreserved/undesignated fund balance in the Boat Fund prepared on a GAAP basis was \$4,705,150, a \$142,228 or 3 percent decrease from a year ago.

Total Miscellaneous Revenue \$ 351,711
TOTAL NONTAX REVENUE \$ 1,823,402

AUGMENTATIONS

Sport Fish Restoration	\$ 234,071
Sale of Vehicles	1,575
US Coast Guard/Grant/Boat/Safety	 397,918
Total Augmentations	\$ 633,564

GRAND TOTAL ALL REVENUE IN BOAT FUND <u>\$ 2,927,988</u>

BOAT FUND STATEMENT OF UNRESERVED FUND BALANCE FOR THE FISCAL YEAR ENDED JUNE 30, 1989

FOR THE FISCAL YEAR ENDED JUNE 30, 1989		
Fund Balance—Unreserved/Undesignated, June 30, 1988 Add: Actual Cash Receipts, July 1, 1988 through June 30, 1989 \$ 2,927,988 Revenue earned as of 06/30/88 and deposited (753,547) Revenue earned but not received as of 06/30/89	4,847,378	
Licenses & Fees \$ 7,661		
Miscellaneous Revenue 90,048		
Interest on Short Term Investments 25,711		
Due from other Funds 2,103,316		
Due from Federal Gov't. (Grants) 241,084		
Total Revenue accrued but not received as of 06/30/89 \$ 2,467,820		
Total Revenue Earned During 1988–89	4.642.261	
Lapses from prior year appropriations		
Unreserved/Undesignated Fund Balance	- 10,	
Before Commitments and Expenditures	9,835,874	
Deduct: Current Year Expenditures and Commitments	3,003,014	
posted from 07/01/88 through 06/30/89		
Due to General Fund—Sales Tax	459,781	
Front Delever House and Mile designed at 00/00/00	4 705 450	

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On The Water OU LUG AND GA

"Oh What a Feeling!"



I mumbled at the traffic jam and drove faster than I should have. But the word around the office was that Opossum Lake was back, that Larry Jackson and his crew had shocked and netted the lake and found largemouth bass up to 21 inches.

Finally home, I traded my work garb for more comfortable blue jeans and a flannel shirt, and dug around the closet for my fly boxes that held popping bugs and streamers designed specifically for bass.

In the parking lot overlooking the dam breast, I quickly strung my nine-foot graphite that carries a nine-weight line, my favorite bass rod, and with shaky hands tied the balsa wood popper to the tippet. I stumbled and nearly fell as I clamored down the steep bank.

Three years ago on a mild January day, Larry Jackson, Commission area fisheries manager, Dave Houser, then in charge of habitat improvement, the Yellow Breeches Anglers and I had put habitat improvement devices into the empty lake basin. The lake had to be drained because the dam breast needed repairs. I was then in charge of the Adopt-a-Stream program and the Yellow Breeches Anglers had adopted the lake.

Nearly 50 people showed up on that day, including a husband and wife team and their children who came to clean the litter from the bottom of the lake. We tied together evergreens that we had cut from the shoreline, and made tepee-like devices that should attract forage as well as gamefish. We anchored the devices with nylon rope and cinder blocks, and then ate soup and sandwiches provided by the Yellow Breeches Anglers.

The group had high hopes for the lake and we talked while we worked on how long it would take to come back. Larry Jackson would be in charge of managing the fisheries and we knew he would do the lake justice. In the meantime, the Commission placed the lake under conservation lake regulations, something that increased the size limit and reduced the creel limit.

That spring, Larry began stocking the lake with fingerling bass, bluegills, crappies and later, hybrid muskies.

Now, three years later, lake surveys turned up bass over the

minimum size of 15 inches.

Clambering down the bank I saw expanding rings of rising fish. I began casting immediately and soon found groups of small, immature bluegills trying to inhale my popping bug. Despite the large size of the bug, quite a few did, and I contented myself catching and carefully releasing the little creatures. I still kept an eye out for the bulging rise of the largemouth I knew existed beneath the still waters stretched before me.

Three youngsters came scrambling up the bank, excited by the presence of a musky in the mid 20-inch range. They saw the fish in the catch basin below the lake. They too had taken bass and bluegills here and were excited about the fishing.

As dusk settled over the land I moved closer to the spillway, casting 60 feet of line to cover the far bank. Then the boil, the rod bent and the large fish struggled as it bore for the middle of the lake. The youngsters came to witness the battle. "Nice fish, mister," one youngster yelled as the bass broke the water. Finally, I grabbed him by the lower lip and held him high for the youngsters to see. He was a nice bass in the 15-inch range, fat and healthy-looking. I removed the popping bug and watched him swim away. He was a special fish, a fish that had found a new home under a special fisheries management plan, one that was obviously working.

Before dark I took two more largemouths over 12 inches and then sat on the bank and looked across the lake. The red sunset shimmered over the still waters and the expanding rings that had dotted the lake were now gone. The world was quiet and beautiful and I imagined it was standing still. The habitat improvement devices were now covered as was the lake bottom we had walked across three short years ago, and in its place was a fishery that was coming on strong. Even though I had played only a small part in the rebirth of the lake, I felt a strong sense of pride. I had given something back to nature, a small gift, to be sure; but nonetheless, I felt closer to this lake than all others I have fished.

Everything You Need to Know About

The Proposed Pennsylvania Trout/Salmon Stamp





The anticipated new revenue would permit the Commission to accelerate required improvements to some of its fish culture stations, including completion of a statewide hatchery wastewater treatment system.

The following information is designed to provide you with answers to some of the most commonly asked questions about the proposed trout/salmon stamp. The Fish Commission wants to know what you think about this proposal. We need to hear from those who support it as well as from those with suggestions for changes. Send your comments, objections and suggestions to: Regulations, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Why has the Commission proposed a trout/salmon stamp?

A trout/salmon permit (which will be issued in the form of a stamp) is needed to ensure the proper protection and management of trout and salmon in Pennsylvania waters. The protection and management of trout and salmon is the single most expensive program managed by the Commission. Trout/salmon propagation efforts alone cost about \$5 million per year. This expenditure represents less than half of what the Commission spends overall on managing the coldwater fishery and providing protection and enforcement in connection with trout and salmon. A trout/salmon stamp is a reasonable way for trout/salmon anglers to pay their fair share for the protection and management of the fishery and for all aquatic resources. It is the fairest way to raise much needed revenues for the Fish Fund.

The State Outdoor Recreation Plan identifies adequate funding for outdoor recreation as a priority. Additional revenues are required because of increased costs in all areas, including personnel, util-

ities, transportation, equipment, supplies and fish food. The Commission faces a critical need to upgrade its trout/salmon rearing facilities over the next few years.

What is the proposed effective date of the trout/salmon permit, and how much will the stamp cost?

The effective date would be January 1, 1991, and the stamp would cost each buyer \$5 per year.

Who would need to buy the stamp under the proposed regulation?

Persons who are currently required to purchase fishing licenses will need to buy a stamp if they want to fish for trout or salmon. As defined in the notice of proposed rulemaking, an angler "fishes for trout or salmon" when he or she takes, kills or possesses trout or salmon from any Pennsylvania waters or fishes in waters under special trout/salmon regulations.

Waters under special trout/salmon regulations include fly-fishing-only, delayed-harvest, catch-and-release and trophy trout areas

The proposal exempts persons under age 16 and those who receive free or institutional licenses. Senior citizens who buy a \$10 senior resident lifetime license before January 1, 1991, will also be exempt from the trout/salmon permit. Persons who buy senior lifetime licenses after January 1, 1991, will have to buy only one trout/salmon stamp for their lifetimes and affix it to their lifetime licenses to fish for these species. Purchasers of the \$2 annual senior licenses would be required to buy a trout/salmon stamp each year.

Why are youngsters between 12 and 15 exempt from purchasing trout/salmon stamps under the proposed regulations?

There are many convincing arguments for including 12- to 15-year-olds in the trout/salmon stamp program. Unlike a general junior license, a trout/salmon stamp would affect only those youngsters who fish for trout and salmon, the Fish Commission's most expensive and extensively managed fishery. The traditional young cane pole angler would not be affected.

At the same time, there are some who oppose any license fees for young people under age 16. The trout/salmon stamp concept has attracted tremendous public support, but extending the requirement to junior anglers would have been controversial with some sportsmen. For this reason,

the Commission concluded that at least initially the trout/salmon stamp should be required only of those who are required to purchase a fishing license.

Will I need a trout/salmon stamp to fish for bass or other fish in "approved trout waters"?

No. As long as you do not take, kill or possess (while in the act of fishing) any trout or salmon, you would not need a trout/salmon stamp simply because you fish in approved trout waters. If you fish in special-regulation waters, such as catchand-release and fly-fishing-only waters, you'd need a trout/salmon stamp.

What if I catch a trout by mistake while fishing for some other species of fish in waters under general fishing regulations?

You would not be in violation of the trout/salmon permit regulation as long as you immediately returned the trout unharmed to the waters from which it was taken.

How will the stamp be issued?

Fishing license issuing agents and the Commission would sell trout/salmon permits in the form of stamps for \$5 plus any issuing agent fee that may be authorized. The proposed regulation makes it easy to issue a stamp. No identification of purchasers and no forms will be required.

Will issuing agents receive a fee for issuing the permit?

This question is currently under review by the General Assembly and Fish Commission. Although no issuing agent fees are included in the proposed regulation, this area may be adjusted before final adoption of the proposal. It is recognized that issuing agents are concerned that they should receive an issuing agent fee for issuing a trout/salmon permit.

Legislation (House Bill 650), currently pending before the General Assembly, addresses this issue by providing a 50-cent issuing agent's fee for all special permits. If this legislation has not passed before January 1991, the Fish Commission will carefully review how it can and should address issuing agent fees in the trout/salmon permit regulations.

How will the stamp be displayed?

The proposed trout/salmon permit will be affixed to an angler's fishing license and signed diagonally across the face of the stamp.

What is the status of the trout/salmon stamp proposal?

At its meeting on January 30, 1989, the Fish Commission voted unanimously to issue a notice of proposed rulemaking and seek public comment on a proposed trout/salmon permit regulation. The proposed regulation has been published in *Pennsylvania Bulletin* and publicized through the media. The Fish Commission held six public hearings throughout the Commonwealth to take public comment on this initiative.

At the end of the public comment period, the Fish Commission will review all the comments received and will decide whether or not to adopt a trout/salmon permit regulation. It is anticipated that consideration of final rulemaking on this subject will take place at the January 22, 1990, Commission meeting. The trout/salmon stamp will, if approved as final rulemaking, take effect in 1991.

Under what authority can the Fish Commission issue regulations for a trout/salmon stamp?

Section 2904 of the Fish and Boat Code provides that the Commission may require permits to take, catch, or kill particular species of fish when the Commission "determines that the permits may be needed to ensure proper protection and management of any species of fish." The Commission has the authority to set the fees for such permits.

What comments have been received concerning the trout/salmon stamp concept?

The Pennsylvania Federation of Sportsmen's Clubs, Unified Sportsmen, Trout Unlimited, some BASS chapters and Izaak Walton League chapters, and other state and local sportsmen's organizations have expressed their support for a trout/salmon stamp.

Since the Commission authorized publication of a notice of proposed rule-making, the Commission has received about 250 written comments on the proposal. The comments are running about two to one in favor of the trout/salmon stamp proposal. The public comments to date constitute an overwhelming endorsement of additional funding for the Fish Commission. About two-thirds of the comments support the trout/salmon stamp. Of the other one-third of the comments, many indicate that they support additional funding for the Fish Commission.

Why is time important?

The Commission's trout/salmon program faces increasing challenges in the years ahead to keep this popular fishery at acceptable levels, and protect and manage these fish. If the Fish Fund does not begin receiving increased revenues soon, programmed growth in Commission activities will stand still, and the Commission's ability to respond to the demands of the trout/salmon program will be diminished. It will thereafter become necessary to begin reassessing some of the services the Commission provides the anglers of Pennsylvania, and some important and popular programs may be adversely affected. The Commission's trout hatchery system needs to upgrade facilities to meet effluent standards.

Simply put, the Fish Fund will need additional revenues in 1991 to address the current and future needs of the angling public. The sooner the Fish Fund begins to receive these revenues, the better the Commission will be able to address these needs.

What revenue will be gained from a trout/salmon stamp?

If adopted, the Commission expects Fish Fund revenues to increase between \$2.5 million and \$3 million per year, depending on how many stamps are sold. This estimate includes an assumption that there will be some decrease in general license sales for at least a few years after implementation of the trout/salmon stamp.

Will all the revenues from the stamp sales be used to support the Commission's trout/salmon program?

Yes. Funds raised by the trout/salmon permit will be used for the protection and management of trout and salmon. The availability of these funds may mean that more general license revenues in the Fish Fund will be available to support other programs, such as research, maintaining water quality, law enforcement and educational efforts.

Trout/salmon stamp revenues will be used to help offset the cost of protecting and managing the coldwater fisheries of Pennsylvania. It is the fairest way to help fund these expensive programs, and if adopted, it will provide a greater level of financial stability for protection, enhancement and management of these species.

The anticipated new revenues will permit the Commission to accelerate required

Even with the addition of the \$5 trout/salmon stamp, the total cost to fish for all species in Pennsylvania would be quite modest compared to these costs in some other states.

improvements to some of its fish culture stations, including completion of a state-wide hatchery wastewater treatment system. These improvements, together with modernization of rearing units, development of warmwater fish production units and improved fish propagation support facilities and techniques, will enable the Commission to maintain its position as one of the nation's leading fish propagation organizations. The Commission will then be able to manage fish production at levels needed to meet future demands while continuing to reduce production costs.

Other benefits will be generated by increased activity in the Adopt-a-Stream program and its related habitat improvement and stream owner cooperative efforts. Young people and urban dwellers will benefit from increased educational efforts and boating and fishing skill training designed to instill a sense of understanding and concern for the protection and enjoyment of all aquatic resources. Acquisition efforts will be expanded to provide more fishing opportunities for use by present and future anglers. Fishery protection, management and research efforts will be strengthened.

If the trout/salmon stamp is approved, how long will the additional revenues sustain fisheries programs at present levels?

Based on current projections, it is estimated that the additional revenues will last three to five years.

The last increase in the general fishing license fee went into effect on January 1, 1983. If the trout/salmon stamp is approved and takes effect on January 1, 1991, eight years will have passed since the last time increased user fees were made available to the Fish Fund.

During this period, Fish Commission costs have increased 58 percent (\$9.8 million) with no corresponding increase in user fees. Prudent management and increases in federal funds have let the Commission function during this period and

meet some, but not all, demands for services from the anglers of Pennsylvania.

Will approval result in improvements to our hatchery system?

Yes. Additional funding is urgently needed to improve wastewater treatment at some of our hatcheries to permit them to continue to operate. The Commission plans to implement improved hatchery design, techniques and procedures.

Will approval result in increased rearing and stocking of trout and salmon?

Not necessarily. A priority is to use additional funding to upgrade present trout and salmon facilities. This will let them continue production at present levels and make them as efficient as possible. Future production goals and capabilities will be reassessed after much-needed work is completed at existing facilities.

How will the trout stamp affect the number of trout and salmon stocked each year?

Additional funding is needed to maintain trout/salmon stocking at present levels. The money generated by the trout/salmon stamp will permit the Commission to make essential upgrades to existing trout and salmon facilities. This will let our hatcheries continue production at present levels and make them as efficient as possible. With additional funds, the Commission will be able to adjust production to meet present and future demands. Without additional revenues to meet some of the urgent needs of our hatchery and propagation system, cutbacks in stocking levels are inevitable.

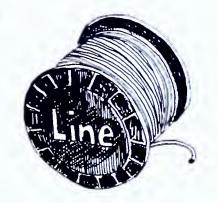
How many other states have species stamps or permits?

Thirty-three other states have species stamps, mostly for trout and/or salmon. There are 14 states (including Pennsylvania) that have major salmonid production programs, and 1I of those states have stamps. Colorado, Utah, New York and Pennsylvania are the only four states of the major salmonid production states without species stamps.

Even with the addition of the \$5 trout/salmon stamp, the total cost to fish for all species in Pennsylvania will be quite modest compared to these costs in some other states.

ITTORS Description by Steven Ulsh

Cleaning Your Fishing Equipment— More Fun Than Cleaning Your Room!



If you're not interested in ice fishing, your midwinter fishing opportunities are limited. Why not take some time this winter to get ready for that first chance you'll get this spring? Here are some things to do.

Empty your tackle box. Then turn it upside down. You'll be surprised how much dirt and grime can build up during a fishing season. Clean the entire box with



a warm detergent-soaked rag. While you're doing this, use a magic marker or labeling machine to put your name, address and telephone number on the inside lid of your box.

Check your hooks. Sharpen those that appear to be dull. Use sandpaper to remove rust from hooks. Take the loose hooks you find and group them together in



sizes. Ask your parents if they have any small plastic boxes they don't need. These make great hook storage containers.

Examine your lures. You might need to repaint some. Make sure hooks are fastened securely. Check the blades of spinners for rust or dirt. Old flies with loose and damaged feathers and hair should be discarded or retied.

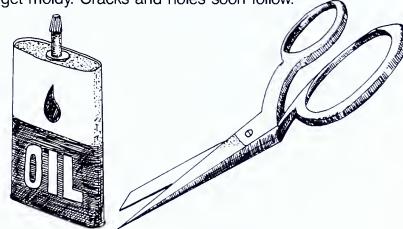
Add new line to your fishing reels. Strip off the old and nicked line you used last summer. Before putting new line on your favorite spinning, spincast, bait or fly

reel, clean it. Add a very light coat of oil where needed.

If you have a fishing vest, clean it as you cleaned your tackle box. Turn it inside out and start over. Loose hooks can somehow find a way into your finger next spring. Get rid of and organize other loose fishing items in addition to those candy, cracker and cookie crumbs.

How's your first aid equipment? Winter is a good time to add a few band-aids, some first aid cream, a small amount of sun screen and some insect repellent. You don't need large tubes or bottles. Perhaps your parents have some samples or partially used containers.

Dry boots in one summer can be sieves the next. Store them properly. Hang them upside down in a dry place. Boots piled in a damp closet or basement often get moldy. Cracks and holes soon follow.



If you carry a knife or a pair of scissors in your tackle box or vest, check it for rust and dirt. Sharpen the dull edges and add a very light coating of oil. A dull knife or scissors doesn't cut line cleanly. This makes it hard to thread it through the eye of a hook.

After your finish your fishing chores—you might think of cleaning your room.

Commissioner Plumly Dead at 59

Commissioner Joan R. Plumly, of Jenkintown, died last November at the age of 59. Commissioner Plumly was an avid boater who valued safety and education most highly. For nearly 20 years she participated on the state, regional and national levels of the U.S. Power Squadrons, and she was especially active in the Delaware

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating oppor-

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River Power Squadron. She was also a member of the Pennsylvania Boating Association for almost 20 years. She had been a commissioner since July 1984.

She taught family and friends to water ski, fish, sail, skin dive and snorkel, and she enjoyed boating on home waters and on the Chesapeake Bay with family and friends.

The Commission will miss her keen interest in and knowledge of Pennsylvania boating.

Ice Safety Pamphlet

How ice is formed, ice strength, ice rescue techniques, and cold-water hazards are some of the topics in Ice Rescue, a new Commission publication. Single copies are free, but with requests include a stamped, self-addressed business-sized envelope. Contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

OTEBOOK by C. Boyd Pfeiffer

A fine-tooth comb makes an ideal fly tying tool to brush out rough guard hairs and fine underfur from both natural and artificial fur. Doing so makes it easier to tie perfect tails and wings on all flies.

Make your own temporary and simple weight-forward spinners for walleye by adding an egg sinker to the line just ahead of a standard single-blade spinnerbait. For an added touch, paint some egg sinkers of different sizes and keep them just for this purpose.

Got a semivee aluminum boat with sloping sides or a john boat with a sloping bow area? Prevent falls by covering these areas with strips of bathtub non-skid treads and strips. Such strips are also useful on any slippery surface, deck or gunwale.

Use light line wherever possible. Light line lets lures get deeper than heavier (thicker) line with more water resistance. Light lines also allow for less resistance and friction on the reel for maximum casting distance.

Heat and sun damages line. Keep spare line and reels in a cool, dark place such as a basement, and never carry tackle in the rear window of a car or where prolonged heat or sun can damage it.

A simple leader straightener can be made from a small piece of rubber inner tube from a car or bike. A 3-inch by 3-inch size is ideal. Run the leader between the folded patch to straighten it. To keep the patch handy, run some line through a corner to hang it from your fishing vest.

Drags on reels today are made of a variety of materials. Some should be periodically oiled, others should never be oiled or lubricated. Check your reel owner's manual for specific instructions on caring for your reel drag. Improper care can ruin the drag by making it jerky.

Sunscreen lotion is a must for fishing much of the year. To spread it without getting it on tackle, lures and flies, use the back of your hands. You can spread it all over exposed skin this way, mopping up any excess by spreading it on the opposite arm. In this way your palms stay clean to handle tackle.



Damaged or torn plastic worms are not worth using. Discard them and always use new, undamaged worms. If discarding worms, do so in a trash receptacle or save them to melt down at home to make new worms in open-surface molds.

The rough windward sides of lakes, ponds, rocks and structure are often best because these are the spots where baitfish become battered and injured. Gamefish know this and congregate in these areas.

ıllustratıon — Rose Boeglı

Employee Recognition

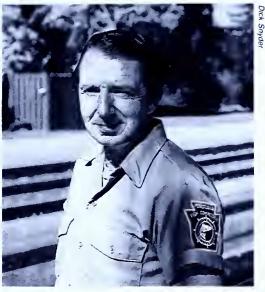
Congratulations to Three Fish Commission employees who will celebrate 35 years of service in 1990. They are Howard E. Phelps, foreman of the Union City Fish Culture Station; Robert L. Burgard, foreman of the Huntsdale Fish Culture Station; and Ken Fiedler, foreman of the Pleasant Gap Fish Culture Station.



Howard E. Phelps



Robert L. Burgard



Ken Fiedler

Wild Trout Fishing Publication

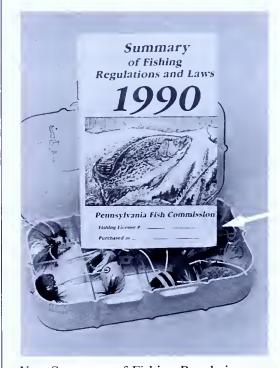
Let's Go Wild Trout Fishing in Pennsylvania is the title of a new full-color Fish Commission publication. The pamphlet is geared toward resident anglers and visiting fishermen. It provides information on limestone and freestone streams, how to fish, when and where to fish, getting to streams, lodging, fishing licenses, and Pennsylvania's wild trout. The publication also features listings of Pennsylvania's Class A wild trout streams and wilderness trout streams. The lists include each stream's name, mileage of Class A or wilderness designation, county and nearest town. Single copies are free, but with requests please include a business-sized selfaddressed, stamped envelope. Contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Backtalk

Argue with the Commission. Applaud us. Advise us. The Fish Commission invites readers to write letters to the editor for publication in this space. Send correspondence to: The Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673. Letters are edited for clarity and space considerations.



Four-year-old John Reott's first fishing trip was a rousing success. John had the great day at Twin Lakes, Westmoreland County. Nice bluegills, John!



Your Summary of Fishing Regulations and Laws 1990 has a helpful feature (arrow) that can save you time and money. When you purchase your fishing license and receive the summary, be sure to write your license number and the name of the issuing agent in the spaces provided. In this way, if you lose the license, replacing it costs only \$1, and if you obtain the replacement where you purchased it, you can get the replacement immediately.





Straight Talk

A Decade of Progress



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

By now, many of you have read the Fish Commission's Annual Report in the January *Angler*. The report clearly shows that the Commission continues to be involved in an enormous variety of programs and activities. What is not apparent are the many changes that occurred during the 1980s, and the expanded services and facilities that have been created during these past 10 years.

The decade began with a major updating of the Pennsylvania Fish and Boat Code in October 1980, and ended with the governor signing law 1989-102 on December 22, 1989, which updated the Fish and Boat Law fine structure. A modern statewide radio system was acquired to serve law enforcement and operations personnel, and limited police authority was granted to all commissioned waterways conservation officers.

A new magazine, *Boat Pennsylvania*, was introduced in May 1984 and is now published quarterly. The Office of Information and Education was elevated to bureau status and the name was changed to the Bureau of Education and Information to accent the Commission's increased emphasis on aquatic resource education. A new education program, entitled Keystone Aquatic Resource Education (KARE), was designed and is now being implemented throughout the Commonwealth.

Fishery managers completed a survey and inventory of the coldwater fishing streams of the Commonwealth, including all stocked trout streams, and implemented a new resource-based allocation system for the adult trout stocking program.

The motto "Resource First" was adopted by the Commission and the Operation FU-TURE (Fisheries Utilization Through User & Resource Evaluation) Task Force was formed to serve as a forum for in-house discussion of new ideas and issues facing the Commission. The fisheries management system was expanded to eight management areas. Lake Erie research efforts were strengthened by establishment of a full-time Lake Erie research team. Many fishery innovations were introduced, such as trophy trout waters, conservation-lake regulations, delayed-harvest areas, and other progressive fisheries initiatives.

Major progress was made in our longstanding effort to restore American shad and other anadromous fishes to the Susquehanna and Lehigh rivers. Agreement was reached with Philadelphia Electric Company to install a fish lift at Conowingo Dam, and funds were approved for construction of fishways over the Easton and Chain dams on the Lehigh River.

Twenty-four new fishing and boating access areas were developed, including the new Frankford Arsenal and Chester County facilities, which serve Philadelphia and southeastern Pennsylvania residents. The Commission also developed the new Southside Park Access facility on the Monongahela River in downtown Pittsburgh. Expansion of parking and installation of public comfort facilities were completed at Harveys Lake and at the Walnut Creek Access to Lake Erie.

Major hatchery reconstruction projects were completed at Benner Spring Fish Culture and Research Station, and Pleasant Mount Fish Culture Station. A new Southwest Regional Office was constructed at Lake Somerset.

Fish culture stations continued to be modernized as funds permitted. These efforts, together with constantly improving skills and techniques, allowed major gains in our fish production efforts. Here are some of these 10-year gains:

- Trout production increased 601,000 pounds (+37 percent).
- Warm/Coolwater gamefish production increased 48 million (+212 percent).
- Total fish stocked increased 54 million (+185 percent).
- Cooperative nurseries increased 26 units (+16 percent).

In 1983, annual resident fishing license costs were increased 33 percent (from \$9 to \$12) and have remained unchanged for seven years. During the decade, inflation and a 70 percent increase in the consumer price index have shrunk fishermen's and boaters' dollars and limited Commission complement to the same as 10 years ago. The Commission has been able to improve public services and maintain important programs by responsive innovative management and increased revenues in the following three activities:

- Fishing license purchases up 120,000 (+11 percent).
- Boat registrations up 98,000 (+58 percent).
- Federal funding assistance up \$2,408,000 (+169 percent).

The advances made during this past decade have been significant, and the 1990s promise to challenge the Commission and Pennsylvania's fishermen, boaters and conservationists to find innovative ways to meet continuing and expanding needs.

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Pennsylvania The Keystone State's Official Fishing Magazine

Trailering is Just a Walk in the Park by Gary Diamond Trailering your boat should be no more difficult than taking a leisurely drive in the family car on a Sunday afternoon
ALLARM: One Year Later by Dr. Candie C. Wilderman ALLARM is citizen volunteers who monitor Pennsylvania waterways for acid deposition. The results of their findings are provocative
Confluence by Denny Kolakowski This confluence is the crossing of two anglers' paths—goes to show that blood is definitely thicker than water
KIDS PAGE! by Steve Ulsh Brrr. It's C-C-Cold out there!
In Search of "Le Brochet du Nord" by Linda L. Steiner There's a certain je ne sais quoi to northern Pike fishing in Canada, but it's special here in Pennsylvania, too
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Mosquito Creek: The Acid Facts by David E. Spotts Elk County's Mosquito Creek can teach conservationists vital lessons 30

The covers

This month's front cover, photographed by Wally Eberhart, shows a gem of a northern pike, just like those you can fool if you read the article on page 15. If you trailer a boat, see page 4, and if you're looking to buy a used rig, don't do it until you read the article on page 24. Acid rain takes a bitter turn in the story on page 30, but there's sweeter music for conservationists on page 7. For entertaining reading this month, see pages 12 and 28.

The angler on the back cover, photographed by Joe Workosky, is trying his luck in Ben's Creek, near Johnstown.

Trailering Is Just a Walk in

by Gary Diamond

railering your boat should be no more difficult than taking a leisurely drive in the family car on a Sunday afternoon. And for a small number of knowledgeable boaters, this is the case. But the majority of people trailering their boats have at least one bad experience every season. Some of the problems they incur are mechanical. Of those, most are due to lack of maintenance.

When you buy a trailer, it's up to you to learn how to maintain the rig on your own or see that it gets done. Here are some ideas on how to maintain your trailer and make your trailering easier.

Backing up

One of the most difficult trailering maneuvers is backing up the rig. This is because everything you've learned about backing up your car is completely opposite when a trailer is attached. If you hold the steering wheel at the top and turn it to the left, the trailer turns to the right, and vice versa.

Place your hand at the bottom of the steering wheel when you back the rig up to a launch ramp or driveway. With your hand positioned on the bottom of the steering wheel, if you want the trailer to go left, move your hand to the left.

Launching

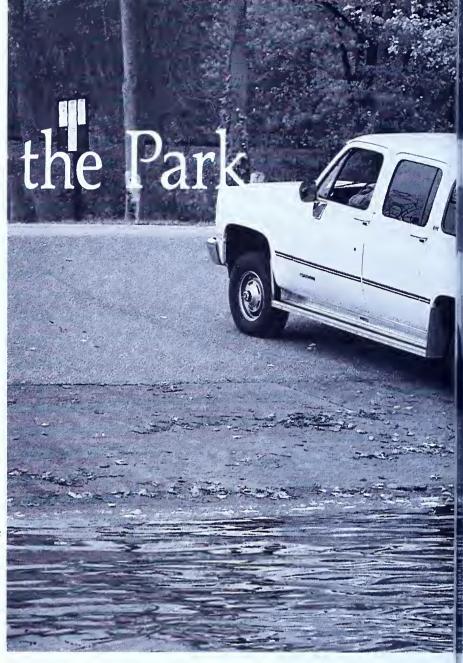
Most of the launch ramps in the Keystone State are more than adequate to handle boats up to about 20 feet in length. They are wide and have non-skid surfaces, and some feature sturdy piers. Most have ample parking facilities for vehicles with trailers. Yet most of the mechanical failures seen on the highways begin at the launch ramp. This is because the entire trailer is often submerged during the launching procedure.

Some trailers are self-loading and must be submerged, but those all-roller trailers really take a beating when they are subjected to complete submersion. Wheel bearings, rollers, lights and even the trailer frame begin to corrode.

All-roller trailers are specifically designed to allow the boater to launch and retrieve without getting the trailer wet. Back the trailer to the water's edge, allowing only the bottom of the tires to enter the water. Then attach a suitable mooring line, disconnect the safety chain and give the boat a gentle shove. The boat will slowly roll off the trailer and enter the water.

Before launching, be sure the motor is tilted up, the drain plug is in place and the wheels of the tow vehicle are firmly chocked. Of course, ramp conditions and water conditions vary, so before you launch and retrieve, inspect the ramp to determine if you need to move the trailer farther into the water than usual.

Once the boat is launched, move your trailer to the parking lot immediately so that others may use the ramp. The launch ramp is not the place to be loading the boat with coolers, fishing tackle and other items.



Loading

Loading your boat back on the trailer is merely the reverse procedure of launching. If the trailer is an all-roller trailer, it should not be submerged. Tilt the motor to the full upright position and with the aid of the mooring line position the bow of the boat between the two end rollers. Then, as tension is applied to the winch cable, the boat will center itself between the rollers and remain centered while it's being winched forward.

Currents at river ramps many require you to attach a second line to a stern cleat to hold the boat aiming straight onto the trailer during retrieval.

Trailers with bunks

Trailers with carpeted bunks have to be submerged during the loading procedure to prevent hull damage. However, you'll find that this particular type of trailer makes it difficult to center the boat. It's a good idea to attach a rope to one of the stern cleats and have another person hold the boat in position while loading, especially on windy days or at ramps on rivers with swift currents.

Towing

If you've been launching and loading your boat using the dry method, you'll likely encounter few mechanical breakdowns while towing. But there are other problems associated with trailering that you should be aware of at all times.



How often have you seen a boat towed at highway speeds whipping wildly behind the tow vehicle? Either the tongue weight of the trailer was not properly set, or the trailer is too light for the load. The tongue weight should be approximately 10 to 15 percent of the total weight of the boat, motor, trailer and all accessories carried when trailering.

For example, if the total weight of your fully loaded rig is 2,000 pounds, the tongue weight should be at least 200 pounds. If the weight is less than that, the rig might tend to sway at highway speeds. Even if the tongue weight is correct, if the springs are too light for the rig, you'll encounter the same problem.

To set the tongue weight, park the rig on a level surface and loosen the winch post bolts. Then place a bathroom scale under the hitch coupler and put a board, like a 2×4 , on the scale. Place the trailer tongue on the board to weigh it and determine tongue weight. Move the winch stand forward or backward until you achieve the desired weight.

If your trailer is too light for the load, you'll likely have to replace the axle assembly and springs with heavier ones or buy a larger trailer.

Preventive maintenance

There are several things you can do for your trailer to ensure that it will live to a ripe old age. Install bearing protectors on the ends of your axles. These items are marketed under several different names. They should be kept full of high-temperature, multi-purpose grease at all times. The devices are spring-loaded and continually force the lubricant into the hub. However, it's still a good idea to remove, clean and repack the wheel bearings at least each season just to be on the safe side.

Winterize your trailer by lubricating all roller bearings and other moving parts. Spray the inside of the tail and range light housings with WD-40 and check for corrosion. Spray the same lubricant on the hitch coupler and wiring connector. Spray the gears on the winch and any other item that is exposed to the elements.

Then jack up the trailer and place the axle on concrete blocks. Remove the tires, spray them with Armor-All and store them in a cool, dry place. Because tires are constructed of porous rubber, moisture can be absorbed from the ground and freeze between the tread and casing materials. When this occurs, tire separation is inevitable.

Trailering your boat should be as easy as taking a leisurely Sunday drive through the countryside. It shouldn't be a hairraising, white-knuckle experience that raises your blood pressure to alarming levels. There are many beautiful waterways to explore in the Keystone State. All you have to do to discover them is hook up the boat trailer and head for the open road.

PA

ALLARM: One Year Later

by Dr. Candie C. Wilderman

An article describing a new citizens' stream-monitoring network in Pennsylvania, the Alliance for Acid Rain Monitoring (ALLARM), appeared in the January 1988 *Angler*. ALLARM is a group of citizen volunteers who systematically monitor the waterways throughout the Commonwealth for the effects of acid deposition. Immediately following publication, hundreds of concerned citizens throughout Pennsylvania contacted the organization to volunteer. As a result, ALLARM more than tripled its membership. Consider ALLARM's new status and the results of ALLARM's monitoring efforts in 1988.

Why be ALLARMed?

The most recent findings of the Pennsylvania State University Atmospheric Deposition Monitoring Program indicate that Pennsylvania continues to receive the largest amount of acidic deposition of any state in the nation. A regional conference, "Atmospheric Deposition in Pennsylvania: A Critical Assessment," held in September 1989, sponsored by Pennsylvania State University, brought together numerous Pennsylvania scientists. Their studies have demonstrated that these pollutants are adversely affecting our forests, soils, aquatic systems, drinking water and monuments. However, because Pennsylvania is a major producer of high-sulfur coal, control strategies remain controversial and politically complex.

Much environmental policy is based on an interpretation of scientific consensus. But scientific evaluations of recent effects of the atmospheric deposition of pollutants on aquatic systems have been severely limited by the lack of historical baseline data with which to compare present-day trends. The collection of baseline data is costly, tedious, and rarely yields immediate rewards.

State and federal agencies charged with the task of monitoring our waterways do not have the resources to collect long-term densely distributed data. In fact, most state agencies barely have the resources to respond effectively to immediate crisis situations. Using trained citizens to fill the data gap is increasingly being recognized as a viable, cost-effective strategy.

ALLARM attempts to address this need. Since its beginning in January 1987, ALLARM has grown to include over 300 volunteers in 45 Pennsylvania counties (see figure 1), many of whom have committed themselves to weekly monitoring of pH and alkalinity concentrations in a stream or lake of their choice for one full year.

From its first pilot monitoring efforts in November 1986 through December 1988, ALLARM has invested over 2,500 hours in collecting data from 186 freshwater systems. The group probably doubled that figure by December 1989.

ALLARM's goals are:

- to collect long-term baseline data on pH and alkalinity in aquatic systems in Pennsylvania for use in assessing the scope and magnitude of the effects of acid deposition.
- to provide early warnings of problems and to document the effects of infrequent but severe depositional events.
- to provide public education through participation.
- to promote environmental stewardship.
- to provide opportunities and training for community people to use data in efforts to influence public policy.

State and federal agencies don't have the resources to collect long-term densely distributed data. Using trained citizens to fill the datacollection gap is increasingly recognized as a viable, costeffective strategy. Profiles of our volunteers, based on a survey response of 100 members, show that ALLARM participants are diverse in terms of educational background, employment and political affiliation. Daniel Shuman, one of our younger volunteers, is an Eagle Scout who has organized 20 other Boy Scouts to monitor 20 streams for one full year. Many of our volunteers are retired (20 percent), and view this effort as a way to make a significant contribution to future generations.

Although all volunteers are community-based, the program is operated by students and faculty in the Environmental Studies Program at Dickinson College, in Carlisle. This unique cooperative effort provides a model for bridging the traditional gap between academia and grassroots activism.

What do we do?

Volunteers are encouraged to monitor a stream that flows throughout the year, which is conveniently located for them. They sample from the same sites, either weekly or biweekly for a minimum of one full year. All monitored stream stations are located on the *Stream Map of Pennsylvania* at the central office. Volunteers are also encouraged to sample upstream from any major urban area or industrial discharges, and all streams that are affected by acid mine drainage are noted as such.

Workshops are held periodically for volunteer training, and the staff conducts several quality-control projects, including field checks of stations and laboratory analyses of samples submitted through the mail. Stream classifications are published semi-annually in the ALLARM newsletter *Stream of Consciousness*. Data is shared with state and federal agencies on request and is presented at workshops, lectures and papers at professional and public meetings.

In September 1988, ALLARM used its data to testify in support of a proposed Acid Deposition Control Act at legislative hearings in Harrisburg. In September 1989, ALLARM presented an analysis of







Volunteers (left, above) monitor streams that flow year-round and that are conveniently located for the volunteers. They sample the sites weekly or biweekly for at least one year. Workshops (top photo) are held for volunteer training, and the staff conducts several quality-control projects, including field checks of stations and laboratory analyses of samples submitted through the mail.



its data to the scientific community at a regional conference sponsored by Penn State University.

What have we found?

To summarize our data, we examined two different data sets: 1) all 186 streams with four or more data points collected since our first pilot project in November 1986, and 2) 47 streams from six designated regions, all of which have either biweekly or weekly data collected for them during the calendar year 1988.

Resistance categories

All 186 streams with four or more data points were classified into four "resistance" categories on the basis of their average alkalinity over the period sampled. Because alkalinity is a measure of acid neutralizing capacity, the higher the alkalinity, the more resistant a stream is to the impacts of acid deposition.

Of a total of 186 monitored strcams, 59.7 percent are considered resistant, 15.6 percent are slightly resistant, 9.1 percent are vulnerable and 15.6 percent are endangered. Surprisingly, within the resistant category of streams, 44.1 percent had periods when alkalinity dropped, temporarily

putting them into a higher risk category. Similarly, 93.1 percent of slightly resistant streams and 76.4 percent of vulnerable streams had episodes that placed them in more sensitive categories. Streams that experienced such episodes can be considered "periodically sensitive." Of the 47 more densely sampled streams in the six regions chosen for a more detailed analysis, 45.6 percent of the resistant streams and 100 percent of all other streams were periodically sensitive.

This data shows that more streams than previously believed are susceptible to the impacts of acidic deposition. Detailed sampling shows that a large percentage of streams are periodically sensitive. The more densely one samples, the more common are these short periods of increased sensitivity. If these periods of acidity coincide with periods when aquatic organisms are particularly vulnerable, such as during juvenile stages, the stream life may be adversely affected. In addition, average alkalinity is a poor measure for the classification of the potential impact of acid deposition on a stream system.

The recognition that alkalinity can vary so significantly, even in so-called "resistant" streams, and the fact that the more The data reveals seasonal variations in alkalinity, responses to extreme rainfall, and regional patterns.

densely sampled streams show an even higher incidence of periodic sensitivity, reveal the importance of intense monitoring over time. Trained citizen volunteers are a cost-effective method to gather such large sample sets.

Patterns of variation in resistance

For each of the 47 streams in the six regions, graphs showing patterns of weekly pH and alkalinity concentrations over the course of the year were produced and compared to graphs of weekly rainfall at the closest Penn State University Acid Deposition Monitoring Station. An analysis of each of the 47 streams in the six regions shows that patterns of variation in alkalinity (acid neutralizing capacity) are complex, with many of the streams showing consistent patterns of seasonality and response to extreme rainfall events.





Seasonal variation

There is a strong and consistent seasonal pattern in a total of 29 streams, or 61.7 percent of all streams analyzed in the six-region area. The dominant pattern in all regions involves relatively low alkalinity concentrations from November through

Volunteers are school students, retirees, anglers and others who view ALLARM as a way to make a significant contribution to future generations.



March, gradually increasing concentrations from April to August, peak concentrations in August and September, and gradually decreasing trends to the late fall and winter minimums.

Factors that may influence seasonal patterns include cumulative rainfall, patterns of severe rainfall events, the ratio of groundwater to surface water input, biological activity, evaporation and land-use practices.

Response to extreme rainfall events

Superimposed on patterns of seasonality are responses to extreme rainfall events, identified in 87.2 percent of all streams from the six regions studied. In all cases, heavy rainfall events correlated with increased acidity.

Although the majority of streams shows responses to heavy rainfall events, the magnitude of response varies from stream to stream, depending in part on bedrock and soil characteristics, biological activity, the amount of acidic deposition in the precipitation event, the pattern of previous rainfall events, and land-use practices. In some streams, heavy rainfall events can decrease alkalinity to as little as 5 percent of its average value.

Regional patterns

There are substantial differences in the total amounts of deposition received in the six regions studied. Furthermore, the regions with the most rainfall are not the regions receiving the highest amount of ionic deposition. For example, Kane Experimental Forest received the highest amount of sulfate and nitrate deposition and only the third highest rainfall amount.

Despite regional differences in deposition, statistical analysis indicates that a

stream's location in a particular region is not an important factor in determining its alkalinity patterns. There is evidence that local watershed characteristics play a more important role in determining pH and alkalinity concentrations. Regional generalizations in Pennsylvania are difficult because of the extreme variability of geologic and hydrologic characteristics. Such complex variability confounds simple prediction. Streams must be sampled densely through geographic space as well as through time for an accurate assessment of risk.

What it all means

A large amount of information on the alkalinity and pH patterns in streams across Pennsylvania was obtained in the calendar year 1988 by a group of trained citizen volunteers from ALLARM. This citizen monitoring effort has demonstrated that more streams than previously expected undergo periods of increased sensitivity, and that the pattern of variation in any particular stream is a complex function of many local and regional parameters. Assessment of the risk of acid deposition to our waterways requires dense monitoring through both time and area.

Citizen volunteers have the ability to provide data on the scale required to expedite the immense task of assessing the impact of acid deposition on aquatic systems. Such data can shed light on broad patterns, can target high-risk systems, can suggest streams that might be of special value for further study by the scientific community, and can lend support to policy decisions that simply cannot wait for an understaffed and underfunded scientific community to achieve the level of scientific certainty and sophistication that we all would prefer.

ALLARM invites you to join its monitoring efforts. As a member of ALLARM, you are part of a volunteer network acting as guardians of our waterways, and helping to build the data base necessary to ensure sound environmental policy decisions. If you are concerned about your favorite fishing haunts, why not join us?

PA

Dr. Candie C. Wilderman is coordinator of ALLARM. She is an associate professor of Environmental Sciences at Dickinson College, in Carlisle, PA. For more details on ALLARM, contact her at Dickinson College, Environmental Studies Program, Carlisle, PA 17013-2896.





BY SAM EVERETT

I went fishing with a friend recently. The trip was my first aboard his boat. We were trying for Lake Erie smallmouth bass, but we never discussed where in the lake we would wet our lines. It didn't occur to me to ask, either, because as we motored past the lighthouse at Presque Isle Inlet, he never once hesitated on his eastbound heading.

A few minutes into the trip, he asked me to rummage through a compartment and pull a coffee-stained, wrinkled navigation chart. He asked me to open it and read the loran TDs next to what he called "number 4."

As I unfolded the chart, I wondered what "number 4" meant. Neatly written notes in clusters covered the chart. I found his "number 4" and read him the coordinates. He nodded and punched them into the loran, and we zoomed off in a new

other places where you've caught fish. Use a felt-tipped pen to circle these productive areas. When you're on the water, picking them out is easier when they're highlighted this way.

Another good idea is to match your loran TDs to the actual places on a navigation chart. In other words, write the loran TDs on the chart next to the fishing spot. Then when you're drifting or trolling and you get into good fishing, mark the TDs on your loran, and check the depthsounder. Call up the TDs later so you can write them on your chart. Remembering what the bottom held in the spot can also help you find it again.

You may discover patterns this way, or see how the bottom contour or other structure affects the fishing in ways you didn't notice before.

Patterns

For instance, I marked the locations on a hydrographic map where I consistently got into good walleye action. In one area, I realized that I had traced the edge of the channel consistently on the 20-foot contour line. Now I know exactly where to try first in that area.

I traced the contour lines in 10-foot increments in black felt-tipped pen. When I finished, I knew immediately I had a new and improved version of my bottom-contour map. I could see the shape of the bottom more vividly, and I could identify places and depths faster.

READING MAPS AND CHARTS IS ONE THING. LETTING THEM HELP YOU BE A BETTER FISHERMAN IS ANOTHER MATTER.

direction at an even faster speed.

When we arrived at "number 4," we rigged up and began our drift. Within two minutes he had the first smallmouth bass of the day flopping on the deck.

I was impressed. He wasted no time finding where the fish were. He wasted no time locating the hotspot. He used that navigation chart in a way I hadn't thought of before.

Here's what he did, and how you can make those charts and maps do double duty as fishing tools, as my angling friend did.

First, study your charts at home. Look at the areas you fish. Look for structure like dropoffs, holes, lumps, channels and I could also visualize the contour of the bottom better than before. In some spots, I identified promising-looking dropoffs, holes and lumps that I'd overlooked. Some of these new-found fishing areas proved to be productive spots that I discovered.

Felt-tipped pen

I mark my hydrographic maps and my navigation charts the same way. I indicate proven productive spots with felt-tipped pen, but I also study these maps between trips. I try to identify good-looking places that I may have overlooked.

For instance, I once scanned a map and realized that on the other side of the lake

from the spot I usually try was a steep dropoff. At the base of the dropoff in about 20 feet was the original creek channel, next to which was an old roadbed. It seemed to me that all this prime structure just had to hold hefty largemouth bass.

I was right. I cranked a jig over the spot and hoisted a 5-pounder into my boat the first time I tried the area. Since then, I always study hydrographic maps to find new places.

On my maps I record the exact places in which I've scored by writing short notes. I mark the spots with a small circled "X." For instance, I wrote down exactly where I positioned my boat at that new spot where I caught the 5-pound bass. My notation in the map corner simply reads, "20 yards off road east, 10 yards off island point north."

This reminder tells me that I was about 20 yards off the roadway that leads into the reservoir and about 20 yards directly below the point of an island.

Taking notes this way on your maps is useful because when you have 40 or 50 spots to remember, all the land features can blend into one confusing web of wavy lines in a jumble of waterways. The notes let you keep everything straight from one waterway to the next and you waste no time getting to the best places.

Marking your maps and charts is especially important if you don't own a loran unit, and most Pennsylvania anglers do not. Taking notes and recording your position by triangulating (determining your spot between two landmarks) takes a little extra time. But in the long run, the minutes you save in finding your hotspots again and the bank of terrific fishing places you record make the work worthwhile.

MAP, CHART SOURCES

The Fish Commission has available a guidesheet that lists where you can get a variety of maps for many Pennsylvania waterways. The Commission itself doesn't sell these maps. The guidesheet is a compilation of map sources outside the Commission. When you request this guidesheet, send a self-addressed, stamped business-sized envelope to: Publications Section, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Confluence

by Denny Kolakowski

He landed a muskellunge once. It was sometime around the mid-1960s and since has been yawning under the back porch of his house. It stretched 34 inches or so and tarnished its silver-olive cheeks into ghost-grey years ago. The nails that circle this bodiless serpent have rusted to the hue of dead oak leaves, but still hold the plywood "trophy" base to the peeling wall.

This musky keeps watch over all backyard festivities pretty much undetected. Not much of a monument for the freshwater king, but that has always been OK with Uncle Carlo. He never meant to catch him, anyway. *This* musky's demise was a consequence of Uncle Carlo's carp casts into the confluence of the Allegheny River and Buffalo Creek beneath the hum of granite bridging at Freeport.

At this point, an overgrown stream that scatters frisky spring trout at its fingertips and swarms lazy summer catfish at its feet joins the heavy effort of the emerald river. The creek wears muddy boots on its bottom down there. It tucks beige suds and occasional debris under crusty roots, snaking the shoreline that Uncle Carlo journeyed past daily.

His path to the confluence parted a confusion of blackberry, poison ivy and nameless weeds. The mud trail showed evidence of free-spirited dogs, checkered bicycle treads and smooth strings of earthworm patterns.

Uncle's pass halted at the polished rocks of the riverside 10 yards upstream of the Buffalo's khaki flow. At this spot, Uncle Carlo braved the elements in his quest for carp and one unlucky musky.

I was rightfully able to precede Carlo with "Uncle" on April 8, 1978, when I met his favorite niece at the altar, although I had tagged him with the title long before. "Uncle" fit him. And I have a feeling everyone in Freeport called him Uncle from his blood kin to the scampering kids he chased down the alley next to his house on the seventy-third Halloween night of his life.

The man crouched to an approximate height of 5 feet, 7 inches, which fluctuated with the weather. He tottered around a fragile frame that disguised his spunk. At least those four pairs of panting lungs would testify to it in the alley during that goblin season.

A confluence is the place where two waterways meet. It's also the place in our hearts and minds where two people meet.



God in his wisdom must have recognized a winning mold when he dreamed up George Burns because he saved it for the special soul of Uncle Carlo, too. With the exception of the cigar, Uncle Carlo was the image of George in *Oh God*—same Coke-bottle glasses, same cream-crinkled cap sporting the exploding marlin he never got a chance to cast for. There was the same tinsel in his eyes. George's face was a tad rounder but the match was close enough for me.

Uncle gave the bulk of his life and body to the Freeport Brickyard. You could guess that by the arch of his backbone and the gold glimmer of his inscribed pocketwatch, which only knew the daylight of his bedroom. Still, he stacked up a proud life. And his brief U.S. Army career wasn't at all diminished by duty between sweating bakery ovens and buzzing tray lines in a hungry camp. He didn't need to cross an ocean to be a soldier.



Uncle Carlo was a lifelong bachelor along with his brother, Attilio, alias "Tucker." Tuck was a shiny-faced potato of a man who was rarely caught without his smile. He was to Carlo as salt is to pepper, in image and opinion. This could be heard without strain throughout any block where they met to toast their Italian qualities.

Though housed on opposite corners of this Mayberry of a town, they were in each other's company daily, caged together by invisible bars they had welded and they alone understood. I surmised their verbal brawls were completely voluntary and their steadfast convictions were merely sparing rounds to keep in shape, to survive on terms vital to their identities.

Predictably they died three months apart.

The shrunken brickworker fished the span of his life. Lacking visual aids, his trout-chasing chronicles relied solely on the falsetto inflections of his short-breathed speech. Still, many times we were knee-deep in numbing spring runoff beneath whisking chickadees along the spell of his favorite stream. The riffles giggled in his voice.

And invariably the back-porch tiger musky erupted at that beloved confluence while he plopped vanilla-spiked doughballs for slimy scales of carp in the badgering shadow of his brother Tucker.

My father-in-law, who took an active part in many of Uncle's outdoor escapades, handed down to me an assortment of relics that pretty much diagramed his healthy life afield.

I inherited 15 pounds of lead sinkers collected in a coffee can. A half-dozen of them exposed their employment with streaks of dried mud.

These weights rest on a basement shelf and only come alive in the dream-inflicted hands of my son. If Uncle Carlo were here to witness Justin's interest, he'd surely be pouring lead clones in quantities that would belly the shelving far beyond its elastic limit.

His green and orange bobber, conceived with night fishing in mind, now clutters my tackle box. At the nibble of the monofilament knotted to its lever, the hollow plastic bulb was to illuminate, thus waking up the twilight-infested angler. No one seems to know if this marvelous device froze with corrosion before or after any use on Uncle's part.

Various dull pewter-colored plugs were also given to me from the man's collection. These beauties were World War I vintage attempts at imitating minnows and foiling fish. I had seen him use these with their anchor-like action and I believe it took all the craftsmanship of an Uncle Carlo to produce catches from these prehistoric crankbaits. Funny how my high-tech lures suffered the most astonishing bad luck when Uncle pulled these from his bag of tricks.

Finally, don't even ask why I'm holding onto his yellowed license holder. It still rattles with a 1948D dime that holds the circumstances of its keeping a solemn secret.

When I started dating Vickie, I was polite with my bewilderment in Uncle Carlo's river ritual. Where he saw solitude, I saw boredom; where he found stimulating debate with Tucker, I found pointless argument; where he fondled memento of pleasures past, I held silly gadgets and paralyzed gear; and where he savored life ticking by, I blurred through blind weeks that merely bridged the weekends.

Carlo Bertuzzi lugged stringers of choirboy-mouthed carp back from the river, drawing tennis shoe slaps and silver dollar-eyed upstarts—the very same he chased through his alleys and his mind. He'd slice up the fish, teaching the gawking kids and me how the common carp could flourish in the best tomato patch in Freeport, no matter what Tucker said.

Since then, each time I bite down into a fresh tomato, I notice the sticky seeds running down to my elbows. They are the color of carp. And all the while I thank the high heavens for one man's confluence with another.

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WIND CHILL INDEX

WIND SPEED		ı	CHIL	L FAC	CTOR	(TEI	MP. O	N EX	POSI	ED FL	LESH	lgs wife ingen	*setfin
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35	3	-4	-13	-20	-27	-35	-43	-52	-60	-67	-72	-83	-90
30	5	-2	-11	-18	-26	-33	-41	-49	-56	-63	- 70	-78	-87
25	7	0	- 7	-15	-22	-29	-37	-45	-52	-58	-67	-75	-83
20	12	3	-4	-9	-17	-24	-32	-4 0	-46	-52	-60	-68	-76
15	16	11	1	-6	-11	-18	-2 5	-33	-40	-45	-51	-6 0	-65
10	21	16	9	2	-2	- 9	-1 5	-22	-27	-31	-38	-45	-52
	35	30	25	20	15	10	5	0	- 5	-1 0	-1 5	-20	-25

AIR TEMPERATURE (°F)



IT'S COLD OUT THERE!

The cold temperatures of winter can spell trouble if you're outdoors and not properly dressed for winter activities. An even worse combination is cold temperature and blowing wind. The lower the temperature and faster the wind is blowing, the more danger to you because your body loses heat faster. *Hypothermia* is a term meaning "loss of body heat." If it is severe enough, you can die. Severe hypothermia can be caused quickly by falling from a boat into cold water. Another common mishap that causes severe hypothermia is falling through unsafe ice.

You don't have to fall into cold water to be in danger of severe hypothermia. Cold wind can be equally dangerous. If the air temperature is 30 degrees F., you may feel cold, but it isn't dangerous. If the wind picks up to 10 miles per hour, the 30 degree F. now feels like 16 degrees on exposed parts of your body. At 20 miles per hour, the temperature sinks to –20 degrees F. Now that's cold!

If you're going outside, consider the temperature and the wind speed, the length of time you'll be outside, and the type of activity you'll be doing. Dress properly. Always wear a hat. Body heat escapes most from your head and shoulders.

Scientists have developed a wind chill index that shows the dangers of combining temperature levels and wind speeds.

Radio and television weather programs now give wind chill index information regularly. It makes good sense to find out what the day's wind chill factor is before going outdoors.

In Search of "Le Brochet du Nord"

It wasn't "un grand brochet," but it wasn't a "petit" one, either. To me, it was terrific. It was the first northern pike I had ever caught, more than 30 inches of glistening emerald-green, its strong body thrashing in the net, tooth-filled jaws still working on the lure. I knew then that more than one of us was hooked.

That first northern, from the Canadian province of Quebec, began a personal fascination with "le brochet du nord," "the pike of the north," which persists to this day.

I've traveled many times to Quebec and Ontario, to fish for northerns. And I've been well-rewarded, in both numbers and sizes of fish. The last couple of times, I noticed something interesting. On the water, back at camp, in town, it seemed I was meeting more Pennsylvanians than Canadians. It's a small world, but not that little. There had to be another explanation.

We Pennsylvanians love to fish, and we like fishing for northern pike. We don't mind spending our precious vacation time to do it, even if it means traveling many miles to another country.

But do we have to? Do we need to drive so far from home to indulge our angling desires? I wondered if we were traveling away from northern pike action by leaving Pennsylvania for points north. That's when I decided to go on a personal search for "le brochet du nord" right here at home.

Pennsylvania pike

I found there is some good news and some not-so-good news for northern pike enthusiasts in Pennsylvania. Yes, there are some big northerns around. The state record is relatively recent, 1980, out of Kinzua Lake, Warren County. It was "tres grand" by American or Canadian standards, 45³/₄ inches, over 33¹/₂ pounds. This tops my own best pike by nearly nine inches and many pounds, and that was a fish that made me wonder if it was coming out of the water or if I was going in.

Among the biggest northern pike taken in 1989 were two exceptional fish, a 40-inch, 18-pounder from Kinzua, and a 39-inch, 14¹/₂-plus-pounder from Lake Arthur, Butler County.

by Linda Steiner



According to Fish Commission records, there were three citation fish taken from Kinzua (Allegheny Reservoir) in 1988 alone. These giants were 44³/₄ inches, 23 pounds; 45 inches, 19 pounds; and nearly 35 inches, 12 pounds. In the few years before that, more big fish in the 40-inch class were taken from these waters.

Where else do the records tell me I should go on my search for big northerns in Pennsylvania? In northwestern Pennsylvania, Lake Wilhelm (Mercer County), Lake Arthur (Butler County), and Sugar Lake (Crawford County) have recently produced "les grands brochets" of over three feet.

The Youghiogheny Reservoir gave up a 42-inch, 19-pound pike in 1988. Book makers have also been caught in Shawnee Lake (Bedford County) and Glendale Lake (Cambria County) in the southwest. In the east, large northerns have come out of the Susquehanna River, including a few 41-inchers in Bradford and Luzerne coun-

ties. A 40-incher is also in the records from the Lehigh River in Northampton County.

With these figures, it would appear my search for Pennsylvania northerns is over, but, say Fish Commission sources, it's not so. Even though the waters that yield trophy northerns have fish, pike are not abundant there, especially large ones.

Northerns, exciting as they are to me with their freight-train take of the lure, don't create much of a splash with the anglers of this state. The northern is not promoted in Pennsylvania and therefore not intensively managed for. Most fishermen are just not interested in them, and the Fish Commission responds to angling wants and needs.

Northerns have not been victims so much of bad press as no press. With the hype lately about its hulking cousins, the muskellunge and the crossbred tiger musky, the purebred northern has gotten lost in the competition for angler attention. Fish Commission sources say they haven't given up on the northern, but in most areas it's not a priority.

Northerns are natives

Northern pike are native to Pennsylvania's Ohio River and Lake Erie drainages. The northwest has always been the stronghold of the northern, but through the years it has been stocked in far-flung waters across the Commonwealth with varying results. In some places, reproducing populations have been established; in others, the pike disappeared. Even Commission biologists admit they don't completely understand why.

Rickalon Hoopes, a biologist and Warmwater Unit Leader for the Fish Commission's Bureau of Fisheries, said that in most cases there must be an angler-following before the Commission actively manages for northerns in a fishery. Unfortunately, the pike fancier's group has been quiet, myself included, and instead has gone north for our sport. Hoopes agreed that letting the Fish Commission know we want to fish for northerns would make a difference.

According to Hoopes, the Commission is currently managing the northern pike on





the basis of natural reproduction where the fish presently occur, sort of a status quo. There is very little stocking of northern pike today, although the Commission was active in the past, planting northerns in the form of just-hatched fry and eightinch fingerlings. Where these stockings "took," northerns are present due to subsequent spawning. Where pike must be maintenance-stocked, says Hoopes, the Commission found it might as well stock tiger muskies because there is more angler demand for them.

Image problem

Why this attitude toward northerns? Pike, it seems, create their own image problem with fishermen. The reason I catch so many pike in Canada, I'm told, is not that I'm a great angler, but that northerns are "very vulnerable to harvest." That's a biologist's way of telling me they'll bite on just about anything I cast to them.

Legal size on most waters is 24 inches, and when a population of northerns reaches that length, they are caught and creeled. All that's left are the small fish. Anyone who's fished for northerns knows they must be two feet or better to be fun. In an ideal trophy northern lake, biologists say, the size limit would have to be raised, the creel limit dropped, and the lake level manipulated to facilitate spawning. But there is a likelihood of getting so many little fish that their growth would be stunted. Anyone who's caught these "pencil pike" knows why northerns can fall into disfavor.

In most Pennsylvania waters and in most anglers' minds, the northern pike has been supplanted by the tiger musky. Tigers are not as readily caught, they grow larger, and because they're sterile, they are easily controlled in a fishery. Although the tiger has many of the northern's traits (it's a cross between a pike and a muskellunge), its lineage is lost on fishermen due to its name. Maybe if it had been called the "northerlunge" or "muskpike," I would think "northern" when fishing for it.

Stocking

Shyrl Hood, chief of Commission Warmwater/Coolwater Fish Production, talked about the decline in northern stocking in the state. The hatcheries were only scheduled to plant 6,000 pike in 1989. That is down dramatically from the 1970s and early 1980s. Hood's records show that hundreds of thousands were placed then in waters all around the state. In Presque Isle Bay alone, more than 120,000 northerns have been stocked since 1974.

Why the drop? Hood believes the Fish Commission is responding to a downward trend in angler interest, or at least vocalization. The northern is a good hatchery fish, says Hood. There is no problem raising them. Pike respond well to culture and are not expensive.

Northerns for brood stock are caught in Presque Isle Bay, taken to Union City Fish Culture Station in Erie County to be spawned, and returned. After the eggs hatch, the young pike are transferred to several rearing facilities, where they are fed a dry diet high in protein. From hatching in early spring, they are fingerling-size and ready to stock by fall. Northerns are spawned today mainly for production of tiger muskies, with about 150,000 of the crosses shipped each year. Only a fish or two are needed for all the pure northerns that are planted.

In 1989, the northerns that were raised were sent to Black Moshannon Lake (Centre County), Memorial Lake (Lebanon County), C.F. Walker Lake (Snyder County), and Lake Ontelaunee (Berks County).



Special projects

There are special projects going on in each of these waters. Bruce Hollender, a Commission area fisheries manager head-quartered at Bellefonte, talked about pike at Black Moshannon. This lake had northerns years ago, he explained, and tiger muskies. But local anglers have expressed a desire to get the northerns back.

Black Moshannon is now involved in a test of the two fish. An equal number has been stocked and the lake will be resurveyed after several years to check the survival of each.

Also under Hollender's jurisdiction, C.F. Walker Lake has an active stocked pike program. A recent trap net survey showed a high catch, with fish up to legal size. C.F. Walker, says Hollender, is just coming on as a northern fishery. Glendale Lake, which has been stocked with all the esocids (pike/musky/pickerel family), is due to be resampled in the spring of 1990.

At Lake Ontelaunee, Commission area fisheries manager Mike Kaufmann reports that for the past four years, northerns have been stocked heavily. Ontelaunee is popular for ice fishing, and pike are an excellent quarry for hard-water anglers. The Commission had planted northerns in the lake in the 1950s and 1960s and the fish were well-received.

Kaufmann says he still hears about the old fishery, which faded when natural reproduction failed during changing lake conditions. With area fishermen wanting northerns, the fish are being tried again, and Kaufmann is hopeful of success.

Lake Marburg (York County) is probably the southeast's best bet for northerns. Ice fishing is most productive, but Kaufmann said he is seeing some cropping of pike at legal size. He told me that the Commission uses caution when introducing non-native fish, like northerns, into untraditional waters. Other than ecological concerns, he agrees that the northern is a great sport fish.

As for Memorial Lake (Lebanon County), area fisheries manager Larry Jackson explained that tiger muskies had been stocked initially, but had not shown up in later surveys. Instead, northerns had, with one exceptional fish measuring 41 inches. Anglers in the area seem to want northerns, so Jackson arranged stockings during the last few years. He wants to see if they can be established to provide a trophy esocid fishery, instead of the muskies. Some time after 1990, the lake will be resurveyed to see if "le brochet" has taken.

Lily Lake, in Luzerne County, wasn't on 1989's list of waters to be stocked with northerns, but according to Bob Moase, that area's fisheries manager, it will be this year. There had been northerns in Lily some years ago, with occasional catches of big ones creating a lot of local excitement. But in the past few years, the northern fishing has fizzled out. Moase hopes to revive it. Moase also said that in surveys of the Susquehanna River from the New York State line downstream 10 miles, he has seen northerns regularly up to 30 inches.

Richard Lorson, the southwest's area fisheries manager, said that there are reproducing populations of northerns in Lake Somerset, Yellow Creek Lake, High Point Lake, Laurel Hill Creek and Lake, and others. Most fish, though, are just up to legal size. Northerns are also found in the Youghiogheny, which is known for giving up big bruisers occasionally.

According to area fisheries manager Ron Lee, in Tionesta, there are northerns and have always been northerns all through the Allegheny River watershed. In fact, in this region, they can hardly be excluded from a fishery. That was tried in Kyle Lake (Jefferson County), and the pike are back again. Mahoning Creek Lake (Armstrong County), Ackley Swamp (Warren County), Lake Wilhelm (Mercer County), and Sugar Lake and Conneaut Lake (Crawford County) are all noted for northerns.

Commission area fisheries managers, rather than continue the shotgun approach of stocking northerns everywhere, attempt to match the species to existing habitat where appropriate. Where natural reproduction has been documented to be sufficient to sustain a fishery, stocking is certainly not warranted.

In other cases, like Black Moshannon Lake, the stocking of northern pike is being evaluated against the planting of tiger muskellunge to establish a foundation for decision-making. At 10 waters, and in particular Lake Arthur, Sugar Lake and Kyle Lake, a minimum size limit of 28 inches (4 inches longer than the statewide minimum) and a reduced daily creel limit of one pike are in place as part of an overall evaluation of "conservative" regulations to enhance and maintain "quality size" sportfish in waters of the Commonwealth.

All in all, while Pennsylvania is certainly not Canada, it does offer some interesting and exciting possibilities and opportunities for anglers seeking northern pike.

Standouts

Even with pike all over the northwest, Kinzua stands out. Roger Dalo, Army Corps of Engineers park ranger, said that northern fishing has improved greatly in Kinzua in the past few years, with more fish now in the 30-inch class. The pike there are "roamers," but can be found generally in the northern third of the lake, from Sugar Bay to the New York line.

As for the far northwest, fisheries manager Craig Billingsley reported that Shenango Lake still gives up some big pike, though the population has fallen from a high in the 1970s. By far the hottest spot for northerns in his region, and in the opinion of other biologists across the state, is Lake Erie's Presque Isle Bay.

The bay was surveyed last October, Billingsley said. He was looking for young-of-the-year walleye, but what he found were northerns "everywhere." Pike were especially abundant in the vicinity of the Perry Monument, around the point into Misery Bay and in the lagoon system. Though it has so many, Presque Isle Bay is practically "unexploited" for northerns.

Neil Shea is the superintendent of the Fairview Fish Culture Station in Erie County. His crew sets nets each year in the bay to catch northerns for spawning. Shea echoed Billingsley's assessment of the pike population there. During the week of trapnetting last March, they captured several hundred fish. Forty were found in the nets in one day alone. The pike not needed for spawning were released on the spot, while the spent breeders were returned after use.

Because of the net's design, only the larger fish can be trapped. Untold numbers of smaller pike may have slipped through. Shea said that most of the northerns he sees are in the 24- to 28-inch range, with an occasional one over 30. These are still out there growing, and hardly anyone is fishing for them.

Like many quests, mine for "le brochet du nord" in Pennsylvania has come full circle. I don't live far from Lake Erie, so I've found that the best northern pike fishing is right in my own backyard. However, I won't be giving up my trips to Canada. There's a certain "je ne sais quoi" about vacationing in a foreign land. But I have found that I don't have to be content to fish for "les brochets" just once a year in the northern climes. I can indulge myself in my home state. It's got the fish, and besides, I know I can speak the language.

Wetlands of Southcentral **Pennsylvania Conference**

Increasing wetland protection is the goal of Wetlands of Southcentral Pennsylvania, a conference co-sponsored by Shippensburg University and Kings Gap Environmental Education Center. The conference will be held Saturday, March 10, 1990, at Shippensburg University.

For more details, contact Richard W. Eberle, Center Coordinator, Kings Gap Environmental Education Center, 500 Kings Gap Road, Carlisle, PA 17013. The phone number is (717) 486-5031.

Your Boat Must Have a Capacity Plate

Since January 1, 1990, every monohull boat less than 20 feet long must display a

capacity plate when operating on Commonwealth waterways. Canoes, kayaks, sailboats, inflatables and boats of unusual or unique design are exempt.

Applications for capacity plates can be obtained by writing to: Bureau of Boating, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

If your boat already has a capacity plate placed by the manufacturer, a Fish Commission capacity plate is not required.

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating oppor-

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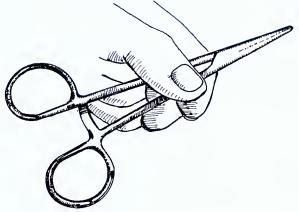
ANGLERS NOTEBOOK by C. Boyd Pfeiffer

When worm fishing, use bright line and become a line watcher. Movement of the line or a small ripple from moving line is often the first indication of a bass picking up a worm.

Hoping for a trophy fish for a mount? When you catch one, keep the fish cold, on ice or frozen. Lay it flat and do not cut it in any way. Check in advance for any additional instructions and for a range of prices from several taxidermists. Get to the taxidermist as quickly as possible.

Paint the top end of ice fishing tip-ups orange for added visibility when a fish takes a bait.

Hemostats—locking plier-like tools originated for the medical profession—are ideal for a number of angling purposes and available from medical supply houses and many tackle shops and mail order businesses. Use them for holding small flies to tie a leader, unhooking fish and for pulling up knots. They clamp right onto your fishing vest for safe keeping.



Use a bright and heavily hackled dry fly as a strike indicator when nymph fishing. The dry fly looks natural, and sometimes even catches a fish. Tie it on a short dropper to the main leader. Tie it up on the leader far enough to allow the nymph to sink to the desired depth.

A pitch fork jury rigged to the lower unit of your outboard protects props on small engines from rocks in shallow water. This is a particularly good idea for Pennsylvania rivers. Use the thin-tined forks, not the thicker-tined spading forks. Remove the handle and attach with several hose clamps to the lower unit or with right angle metal brackets bolted to the cavitation plate.

Got an old rod with a broken butt section? Glue the tip end into a hole drilled into a 1inch to 1-1/2-inch diameter wood dowel about 12 inches long to make a simple ice fishing rod. Tape the reel in place with masking or electrical tape. You may have to remove (or not use) one or two guides close to the handle.

For more hook-ups on jigs with plastic brush-style weed guards, trim the top of the weed guard level with the point of the hook. Trimming also varies the length of the individual fibers to make it easier to hook fish, while still protecting the hook from weeds.

Scraps of carpet, often available free from carpet supply houses, are ideal as noise mufflers and knee protectors in canoes. If possible, get synthetic carpeting that will dry quickly when wet.

illustration - Rose Boegli

NOTES FROM THE STREAMS

Sure you weren't fishing?

On June 10, Fish-for-Free Day, I approached two fishermen who were sitting on the dock at the Auburn Dam Access Area. As I walked out onto the dock to ask how the fishing was, one fisherman walked back to his car. I saw that three rods were being used. I talked with the fisherman who had stayed on the dock, noting that he had his license lying on his tacklebox. He said that the fish were not biting. I then asked the fellow who went back to his car how the fishing was. He said that he was not fishing, only watching.

Then I realized that neither of these two fishermen knew about Fish-for-Free Day. I asked if he was sure he wasn't fishing, because if he weren't, I would have to arrest his buddy for using three rods. Finally, he admitted that he had been fishing and that he didn't have a license. I then informed them that it was Fish-for-Free day and licenses were not required. This was sure case when not telling the truth could have been costly.—*Gary L. Slutter, WCO, Schuylkill County*

The squirrel stroke

While assigned to the Delaware River for a BUI operation in Delaware County, a ship ran aground and spilled 800,000 gallons of heating oil. WCO Imler, Jim Williams, regional director for the Game Commission's Southeast Region, and I checked the river for wildlife that might have become contaminated by the oil. On the way to the spill site I saw something swimming in the river. We swung the boat around and found a squirrel swimming from an island in the river to the Pennsylvania shore. At this time the oil had not yet reached this island, but I guess this squirrel was taking no chances on being stranded on the island.—Gary L. Slutter, WCO, Schuylkill County

Thanks for the help

I would like to thank those sportsmen who called and reported violations for fishing in approved trout streams before the season. In every case in which the caller said that he would testify in court to the violation, the violator was arrested and paid a fine. For those who didn't want to get involved, just remember that these individuals are taking *your* stocked fish.— *Gary L. Slutter, WCO, Schuylkill County*

Hats off to sportsmen

On Saturday, May 13, 1989, the Potter County Anglers Club members seined and drew down the large 5-acre pond on their Cooperative Nursery property along Route 872 in Odin. As usual, the work crew was sparse and the operation of moving fish from the muddy pond water to the tank of freshwater was hectic. At one point, more fish were netted in the seine than could be moved by the small crew quickly enough and fish began to get sick.

At that point two unknown anglers and their young son and daughter from Barnesboro stopped by to see what was happening. At the sight of the predicament, they dug right in to assist in carrying fish from the muddy pond to the tank. They were just out riding around to check on several camps for sale in the area, not realizing that they would be instrumental in helping save hundreds of trout.

My hat is off to these *sportsmen* for their assistance in an hour of need.—*Cecil R. Houser, chief, Cooperative Nursery Unit*

Tracking expertise

Wintertime in Erie County brings an abundance of steelhead trout into the streams and more noticeably to protected nursery waters. The large, egg-laden fish are vulnerable to poachers, and their protection consumes the bulk of our winter patrol time.

One snowy mid-December evening around 10:00 p.m., DWCO Russ Fisher came to my house and said that Trout Run had just been hit by poachers and that it may be a good idea to check out the tracks before the forecast snowstorm arrived that night.

By flashlight I surveyed a familiar scene: blood-covered snow, a discarded beer can, and a drag trail made by a large quantity of recently bludgeoned trout. I continued on to the poacher's point of escape, approximately 300 yards downstream from where it began, and waited for Russ to retrieve our vehicle.

On his return I told him that it was a

good thing that he came and got me since my "expertise" in tracking enabled me to ascertain that this suspect was 5-feet, 8inches tall, 160 pounds, had hazel eyes and blond hair. While he was puzzling over this information, I went on to tell him the suspect's name and address. With a grin, I then showed him the blood-stained fishing license that had been knocked off while loading the getaway vehicle. We told the suspect that one of the fish had informed us of his involvement, at which point he confessed his violations. We were sure that the license was knocked off by a trout in a final act of defiance.—WCO John W. Bowser, Erie County

Unique creels

During an angler survey this past spring, I had the opportunity to interview a young man with a unique item of fishing gear. When asked if he had caught any trout, he indicated that he had one. When asked if I could see the catch, he led me to his "creel," which definitely took the prize for the most unusual way of keeping one's catch. There was certainly little danger of the prize catch escaping. Before my wondering eyes, with its lid securely bolted down, was a pressure cooker. Second place goes to the young angler with his catch in his hip boot.—*Bob Moase, Area 4 Fisheries Manager*

Thank-you note

As I began the ice fishing part of my employment as a fisheries biologist aide involved in an angler use-and-harvest survey on Tamarack Lake, Meadville, I was reminded of my work on the lake last season and decided that this letter is definitely in order.

It is really a large thank-you note to all the local people and those from various areas of our state and other states whose friendliness and cooperation during the April through October portion of the survey made the job much easier and enjoyable than it might have been.

Being an angler, I was impressed with their attitudes. I was pleased to see a larger number of women than I had expected to encounter. Also, the younger anglers in the area, who at times made up a good portion of my survey, were all pleasant and cooperative.

Considering the occasional disturbance I may have caused in some anglers' fishing at the lake, and the ongoing controversy this year concerning weed growth, I greatly

appreciated the friendly attitude I encountered. I anxiously look forward to the ice fishing season.—Cheryl Hopkins, Fisheries Biologist Aide, Fisheries Management Division

Angling show observations

While working a table at the 14th Annual Angling Show, Bethesda, Maryland, sponsored by the National Capital Chapter of Trout Unlimited, I could not help but be impressed with the high regard held for the Pennsylvania Fish Commission and its numerous programs by out-of-state anglers.

Contrary to some shows where complaints are more common that not, I heard only compliments from our angling friends "south of the border."

Sometimes we Pennsylvanians are too close to the natural resource to appreciate fully what we have and how precious it is. Quite a few attendees expressed strong affinity for waters including Clarks Creek, Yellow Creek, the Little Juniata River, Letort Spring Run, Yellow Breeches and Falling Spring Branch.—Richard A. Snyder, chief, Division of Fisheries Management

PFD lesson

While patrolling the Delaware River on a balmy, late August, Saturday evening, DWCO John Celley and I saw a small, black speedboat make a series of high-speed, sharp, erratic turns. As we approached, we saw a number of brightly colored objects bobbing in the vessel's wash. It became apparent that the watercraft was maneuvering through a makeshift slalom course using several personal flotation devices (PFDs) as slalom buoys.

Within minutes, the speedboat returned to collect its temporarily abandoned property. We pulled alongside and initiated a standard safety equipment inspection. As I had suspected, the vessel's occupants had thrown all their PFDs into the river, and now failed to possess a sufficient number on board.

The operated learned a valuable and expensive lesson that evening—personal flotation devices serve absolutely no purpose unless they are used for what they're intended.—WCO Alan D. Robinson, Delaware County

"I didn't build it . . . "

My assistant, Dave Keller, and I were helping Explorer Post 100 renovate a fish habitat improvement device on Hicks Run. The stream runs through state forest property in Cameron County and flows past a heavily used forestry campground. Through the course of the summer, kids (and probably adults, too) had constructed several rock dams across the stream. Rock dams can collect silt and erode stream banks, and building them is actually illegal if they block fish movement.

While dismantling one of the dams, we noticed two brothers about 8 and 10 years old watching us very closely. The older boy asked Dave if they could rebuild the dam after we left. With great patience, Dave began to explain the negative effects the dam had on the stream. When the younger boy heard the word *illegal* mentioned, he immediately pointed to his brother and with a wide-eyed expression on his face blurted, "I didn't build it—he did—I only put one or two rocks in!"—Karl Lutz, Adopt-a-Stream Eastern Area Coordinator

Some people never learn

In April I was patrolling pool 5 on the Allegheny River when I saw a couple fishing. When I asked to see their fishing licenses the husband said he left his at home and his wife did not have a license. I issued the wife a citation and gave the husband five days to mail in his license for a warning. I never received his license so I filed a citation in court on him. Both citations were then paid.

Then last June, DWCO Davila and I were patrolling Cross Creek Lake when I noticed the same couple fishing. When DWCO Davila asked to see their licenses the husband produced a valid 1989 fishing license bought earlier in the day. His wife still did not have a license. While we were issuing the wife a field acknowledgement of guilt, the husband said, "I told her to get a license but she never listens to me!"—WCO Emil J. Svetahor, Armstrong County

Cool, wet, wild

As the summer ends and fall begins, there are a few who will remember water safety. I refer to students who participated in the Fish Commission's Boating and Water Safety programs.

Our programs started out with a discussion about various types and function of PFDs (personal flotation devices). The students on this hot, humid day were less than attentive. The real learning began during a short relay race of swimming 50

yards while wearing a PFD. The students' comments ranged from, "this sure is not very far," and "I can't swim with a PFD on," to "sure will be easy to complete." However, on completing the swim of 50 yards, one student responded through chattering teeth and while gasping for air, "glad to have the PFD on, 'cause I sure couldn't have saved myself if I didn't."

I will remember all the students I taught this summer. It really was cool, wet and wild.—David McGonigle, Fish Commission Bureau of Boating intern from Shippensburg University, Boating and Water Safety Awareness instructor.

Ad campaign

While looking through an outdoor magazine, I came across an advertisement for a popular ATV. On the top of the page in bold print, bigger than even the name of the product, was "NO FISHING." This ad is exactly right in many cases. The improper use of ATVs is the reason why many streams now are posted with no fishing signs. Please be responsible when you ride, respect the landowner and let's not have any more streams closed by ATVs.—WCO Gary L. Slutter, Schuylkill County

Harveys Lake gill net survey

Last October, I and my staff placed five 125-foot experimental gill nets in Harveys Lake, Luzerne County. When we lifted the nets the next morning, we collected 61 walleye that ranged from 14.3 inches to 23 inches, five landlocked salmon of 18.5 inches to 26 inches, eight brown trout that measured 23.1 inches to 27.4 inches, and other nice-sized fish, including largemouth and smallmouth bass, and chain pickerel.

Remember that this was only one night's catch. Even so, here are some interesting facts concerning this survey:

- This was the first time we have been able to document the success of the Harveys Lake landlocked salmon program, which began in 1981.
- The number and size distribution of walleye show that the fingerling stockings that were initiated in 1985 have been successful.
- The size of the brown trout was impressive. During the last few years, we've received reports of anglers catching large brown trout in Harveys Lake, and the results of this survey document those claims.—Bob Moase, Area 4 Fisheries Manager.



Left to right, Commission Executive Director Edward R. Miller, Bill Frazier, and Commission President David Coe.



Left to right, Commission Executive Director Edward R. Miller, Gerry Greiner, and Commission President David Coe.



Marty Marcinko, fisheries biologist and Commission Coldwater Unit Leader.

Employees Receive Awards

Fish Commission employees Gerry Greiner, Bill Frazier and Marty Marcinko received award plaques from Commission Executive Director Ed Miller at last October's Commission meeting in Johnstown.

Greiner's award reads, "For lifesaving action on August 7, 1988, when a race boat veered out of control during the Pittsburgh Three Rivers Regatta and injured 23 people. His immediate action to assist in administering first aid was a contributing factor in saving lives."

Marty Marcinko, fisheries biologist and Commission Coldwater Unit Leader, won the "Professional Conservationist of the Year Award" from the Pennsylvania Council of Trout Unlimited "for efforts to conserve, protect and enhance the coldwater resources of Pennsylvania."

Bill Frazier, chief of the Bureau of Fisheries Data Processing Section, received a Commission award for outstanding service. His plaque reads, "Outstanding service in restructuring and bringing on line the Fisheries Resource Database. This program was accomplished through his personal commitment and his dedication to effective fish management."

Today's Tow Vehicles Make Trailering Easy

Matching the right tow vehicle with an appropriate boat trailer is easier than ever, say trailering and automotive industry experts, because high-power, quality-performance tow vehicles are widely available.

If you plan to tow with a Chevrolet vehicle, you can write for a copy of the Chevrolet Trailering Guide: Chevrolet Motor Division, Special Vehicles Department, 30007 Van Dyke Avenue, Room 246-06, Warren MI 48090. Ford owners can write for a copy of Ford's RV and Trailer Towing Guide: Ford Division, 300 Ren Cen, P.O. Box 43306, Detroit, MI 48243.

Chrysler towing information is available from: Chrysler Corporation, P.O. Box 1718, Detroit, MI 48288. GMC owners can write for a GMC Recreational and Trailer Guide: GMC Truck General Motors Corporation, Customer Service Department, 31 Judson Street, Pontiac, MI 48058.

On The Water ON LIPS MARKET

with Dave Wolf

"Habitat"

My stream is special. It is a place of many hours of pleasure. A place to cast the fly I have tied and to catch a trout that resides there. I protect my stream ferociously and at times object to others who fish there. But I know, too, that the spectrum of fisheries management goes beyond my stream.

We want the best for ourselves—no crime in that. We want streams, lakes and ponds brimming with fish, not just ordinary fish, but fish that will bend our rods to the breaking point, fish that will tire our arms. After all, we are fishermen, pursuers of fish who tie up a lot of time and money in our sport.

We want to catch fish in short periods of time, too. We do not want to cast hours on end for a fish that may be measured only in inches. We want big fish on every tenth or eleventh cast. If we can catch them in fewer casts, so much the better.

Many think that the answer is in stocking more fish. The idea sounds reasonable—the more adult fish stocked, the more we anglers will catch and the happier we will be. Others have watched the success of fingerling trout stocking. They have watched rivers and streams build up thriving fish populations, and a portion of those fish become large. Immediately we want that to happen in our streams.

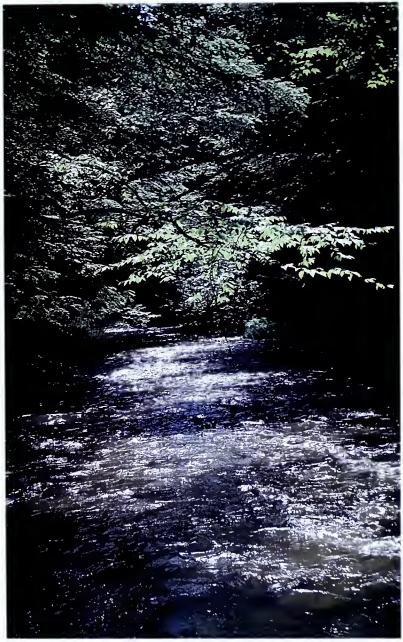
I came to the Commission over eight years ago, and I must say that eight years of learning the ins and outs of the Commission have altered my views.

For example, I realized that the Commission is responsible for managing more streams than mine alone. The Commission manages over 45,000 miles of waters and hundreds of lakes and ponds.

The key word in management is habitat. The habitat must be suitable for fish to reside in a stream or lake for extended periods. If the habitat is not present, then your favorite fishing haunt may be less desirable than you would like.

For example, a trout stream that is icy to the touch in April and May could turn warmer than last night's bath by late July or August. Warmer-than-desired temperatures usually are accompanied by low flow and leave you with a stream that does not provide enough oxygen for the trout that remain late in the season. Your problem then is twofold: Water temperature that has risen above the trout's tolerance levels and oxygen levels too low to support the fish. Fishing here in July and August would be like hunting buck in a plowed-under cornfield. Yes, I know in-flowing tributary streams may be a gathering place for a few lethargic trout, as might spring seeps, but a few holding areas do not make a trout stream.

This stream may receive trout early in the season and may be sufficient for a "put and take" trout fishery—we put them in, you take them out—but trout remaining in late summer will succumb to the elements. Seems elementary enough, but laymen like me often wonder why my stream can't produce trout like the one on the other side of the mountain and we look for someone to blame, namely those folks in fisheries management.



Toms Run, York County

A few years ago the Commission began using the working slogan "Resource First." This was to mean that the resource would be placed before other considerations. Basically, the idea behind the concept is that what is good for the resource is good for the angler. Unfortunately, other factors do enter into the mission of the Commission, and they include angling pressure on a given resource, financial constraints, manpower shortages and, at times, pressure from sportsmen who do not agree with what the Commission is trying to accomplish.

The bottom line is simple: Protect, enhance and conserve the resources we are in charge of today and fishing will continue to improve. After all, the Commission wants the same thing the angler desires—better fishing for everyone.

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Smart Used-Boat Buying

by Art Michaels





Separate the treasures from the trash by applying some specialized know-how. There are tremendous values out there waiting to be bought, and equally huge savings you can reap.



When you buy a used boat, motor and trailer, you want to get the most for your money. But getting the most for your money can be difficult and confusing! Do you take the seller at his word? Which items should a dealer check for you? Which matters can you best decide? How much is this rig or that rig really worth? Is anything guaranteed?

Don't worry. You can clear away the confusion and make smart choices. To separate the treasures from the trash, you need specialized know-how. Here are a few smart ideas that can help you recognize and buy a peach of a rig.

First, you need to know how old a boat, motor and trailer are. Knowing the model year of the equipment can help later if you want to modify the item, or if it needs to be repaired. Knowing the model year of the equipment can also help you decide whether or not to buy it. An outboard motor, for instance, might be so old that parts and accessories are either no longer available or are difficult to obtain.

A boat's HIN (hull identification number) tells you its model year. The HIN appears most often on the starboard transom. On many aluminum boats, the number is stamped onto a metal plate. On most fiberglass boats, it's engraved in the transom. The last two digits are the boat's model year.

Reading the model number or serial number of an outboard motor tells you its model year. Look for this number on a plate that on most outboards appears on the clamping bracket. Some motor manufacturers place the serial and model numbers on the inside of the cowling (the motor cover), so if you can't find the number on the mounting bracket, look inside the cowling.

Some motor makers recognize an engine's model year by its serial number. Others use the model number to identify its model year.

On most boat trailers you'll find the serial number and model number on a trailer frame part. The information is usually stamped or printed on a form-like sticker.

Write down the numbers you locate on boats, motors and trailers. Then take the numbers to a dealer. The dealer can confirm the model year of the item.

Recall check

Part of checking out a rig also includes calling the U.S. Coast Guard Boating Safety Hotline to find out if the item has been involved in a manufacturer's safety recall. The number is 800-368-5647. The operator will need to know the boat, motor or trailer's make, and its model and serial numbers.

If the item has been recalled, take it to a dealer to learn whether or not the safety defect has been corrected. If it has, no sweat. Go ahead and make an offer on the item, if you like.

If the item has been involved in a safety recall and it has not been fixed, you may want to find another used item than go through the trouble of getting the seller to fix the item, or taking care of the task yourself. You decide according to the nature of the recall.

"Blue book" smarts

Most dealers have "blue books," which are published annually for boats, motors and trailers. Call a dealer and ask him to quote the blue book prices for the items you're considering. You'll be told a high price and a low price.

Remember that blue book prices are only estimates. Several factors go in to determining a used item's actual worth. For instance, a garage-kept rig might command a higher price than one left outside for several years. An older item in superb







condition might also be worth more than the blue book quote. And an item that's no longer made might be worth less than the blue book listing because parts are unavailable or are hard to get.

Transom, hull inspection

When you know the blue book estimate, give the rig a thorough going-over. If you're inspecting a fiberglass boat, go to the transom. Push down forcefully on the outboard. Move it from side to side. Look carefully around the mounting area for cracks in the transom. If the engine doesn't move, the transom is probably OK.

If the engine moves, the transom might be cracked. Look at another boat because repairing a cracked transom is necessary but expensive.

Look at the hull near the bow. You may have to get underneath the boat to do so. Is the hull undamaged? Or has it been clobbered by beachings and collisions? This fiberglass repair can be done, but you'll want to consider that cost if you make an offer on the boat.

You need a bumpy test ride in an aluminum boat to check out its rivets. If the

Test-ride a trailer for several miles and then feel the wheel hubs. If they're cool, all's well. Hot hubs spell trouble. For a reasonable fee, most dealers will inspect and fix, if necessary, any item you're considering buying.

rivets are OK, the boat is sound. If the rivets leak or are loose, look at another boat.

Salt water corrodes hardware quickly, so be sure to check out the boat's hardware if it's been used in salt water. If it's worn, it needs to be replaced.

When you buy a used rig from a dealer, you don't need to test it on the water. The dealer will give you a guarantee for a certain number of days on anything that goes wrong. Be sure this guarantee is specified in writing.

Oil test

When you buy a rig from an individual, always water-test it. First, before the boat goes in the water, take a drop or two of oil from the motor's lower unit. If it's black, as oil should be, the engine oil is most likely not contaminated. If the sample you take is milky or the color of chocolate milk, the oil is contaminated with water and the problem needs to be corrected.

A dealer can tell you how serious the problem is and how much correcting it will cost. This kind of repair can be expensive. So even though the damage can be fixed, know the cost before you make a deal and add that charge to your offer.

Use this test for outboard motors as well as I/Os (inboard/outdrives).

When you find a rig you're seriously considering, ask the seller if the rig has been serviced regularly at one dealership. Go to that dealer and ask to see the rig's service records. In many cases, boat owners have their boats serviced and maintained by one dealership, so dealers know rigs like barbers know heads. Checking out the service record can tell you if the item's been taken care of regularly or if it's had a track record of trouble.

Engine, propeller problems

Going over an engine requires a threepart visual check. First, look at the skeg, the motor's lowest part. Skeg damage can be slight on the outside, but it could point to more serious and costly problems inside the unit. Check all this out by running the rig on the water.

Next, look at the propeller. Bent and dented props need to be fixed.

Third, watch out for a bent propeller shaft. To test for a bent shaft, put the motor in neutral and spin the prop by hand. A wobbly prop spells trouble. If the motor you're considering has a bent prop shaft, find another engine.

I/Os require careful attention, too. You'll want to test an I/O on the water to make sure it doesn't overheat. Test the steering, too. Cables can rust and fixing or replacing steering cables is costly. Shift gears. Be sure they work silently.

While you're water-testing a rig, scan the instrumentation to make sure everything works. Similarly, give the electronics a thorough workout.

When you consider electronics and accessories in the deal, get a list of everything that's coming with the rig. Misunderstandings here can account for big price differences.

Walk on the boat deck and note soft spots. They're a giveaway to places where the deck wood has rotted. A deck with soft spots will have to be fixed.

Similarly, check out a boat's seats and upholstery. They shouldn't be ripped. Look at the framing wood behind the upholstery. If it's rotted, it'll need to be replaced. Replacing the seat framing is much more expensive than fixing the upholstery. The hinges should be in good shape, too.

Trailer check

When you look over a used trailer, first make sure the trailer is the right size for the boat it'll carry. The trailer's gross trailer weight rating (GTWR) should be less than the weight of the full trailered load. For safety's sake, you may want to consider a rig whose GTWR is a full one-third more than the rig's actual weight.

For instance, if the trailer's GTWR is 2,000 pounds, a fully loaded rig weighing

about 1,400 pounds would let the trailer provide an adequate margin of safety.

If you're not sure of a trailer's GTWR, the dealer can tell you, but you'll have to supply the dealer with the trailer's serial number. Remember that this information can be found on a trailer frame part.

Inspect the wheel hubs thoroughly. Prop up the trailer so that the axle is off the ground, and spin the wheel with your hand. Listen. A grinding, gritty noise means that the hub needs to be serviced. This task might include replacing the bearings, seals and rings, and refilling the hub with grease.

Test-ride the trailer. After about five or six miles of highway driving, pull over to the side of the road and put your hand around the outer hubs. If the hub is cool, all's well. If it's warm or hot, there's trouble.

Your best bet is to take the trailer to a dealer. For a reasonable cost, the dealer can inspect and fix the hubs.

If the trailer has rollers, launch the boat to get it off the trailer. Then spin each roller by hand and move the roller arms. The rollers should be well-greased so that they spin freely and quietly. The roller arms should not be frozen in one position.

If you're looking over a trailer with bunks, make sure the carpeting isn't worn in spots. Be sure also that the carpeting is firmly fixed to the bunks.

Tire tips

Check out the trailer tires, too. Tires kept at their maximum inflation pressure are probably OK except for normal tread wear. After driving the trailer a few miles, feel the tires. Cool or warm tires are normal. Hot tires suggest problems, especially if the inflation pressure is correct. Tires that run hot when they are inflated properly should be replaced. "Hot tires" are too hot to touch comfortably or are nearly that hot.

If you need to buy new trailer tires, look for the largest light truck or automobile tires that the trailer can accommodate. Many tires made specifically for boat trailers require high pressure, and they are expensive. Light truck or automobile tires require lower pressure and cost less.

Lastly, look over the winch rope or cable. If it's frayed, it'll need to be replaced.

There's no easy way to get the most for your money when you buy a used rig. But if you use these ideas, you can tilt the odds greatly in your favor and shop more confidently.

Take a Kid WHERE!

by Jim Mize

Like salt and pepper, bread and butter, pigtails and ink wells, kids and fishing fit. Every calendar company in America publishes at least one picturing a sandy-haired kid carrying a cane pole. Calendar producers, however, are mostly grandparents.

Now don't get me wrong. I like kids. And I think kids should learn to fish at an early age. But like the saying goes, forewarned is forearmed. It's just that most days even four arms are not enough.

Take, for instance, my two kids, Coconut and Gumbo. Picture a five-year-old Swedish female investigative reporter and that's Coconut. My lower back pains trace back to curling uncomfortably around her little finger.

At the same time, let me say that I guide her through life with a firm hand. But most of the time it's planted firmly against my forehead in disbelief.

Her investigation starts the minute her feet hit the boat floor. Maybe the carpet triggers her curiosity.

"Dad, you know a lot about the outdoors, right?"

As my chest expands, pressing hard against the top button, I answer humbly, "Well, a fair bit."

"Dad, do fish blink?"

I thought for a minute. "I dunno. Why?"

"Well, don't they get water in their eyes?"

While I'm sorting through that one, she hits me from the blind side with another.

"Do fish burp?"

"Well, I . . . uh . . . I dunno."

"And one other thing. You keep telling me to be quiet 'cause the fish will hear, right?"

"Right." Even as I answered I knew she had led with a jab and the hook was close behind.

"Then why don't they have ears?"

The only recourse in such a sparring match is to take the offensive. Otherwise, you'll be quickly belittled, befuddled and bedeviled, flat on the mat and down for the count.

"Dad, why do fish eat worms?"

"Because they can't get into McDonalds."

"Oh . . . why not?"

"No shirt, no shoes, no service."

The trick to fishing with kids is staying one step ahead of the question and two steps ahead of the boredom.



Barbie

When Coconut gets bored, she begins practicing her tap dance routines. Lunch is quietly pieced over the side to the ducks. The rubber worms are braided into a headband. I thought for a while that I had the solution to this one as well.

"Coconut, you can take one toy on the boat," I had said.

"OK, how about Barbie's Soda Shop?"

"Sure."

Only in the main channel did I notice the fine print on Barbie's Soda Shop box. "Over 900 pieces," it said, like that was good news. The first time I turned into a headwind, Barbie jumped into the soda-shop phone booth to call the governor for disaster relief funds. Tiny sodas flew everywhere. Chairs tumbled and tables rolled.

No doubt Barbie's designers will soon provide her with her own fishing rig. The box will read, "Included is a miniature tackle box with over 1,200 microscopic crankbaits." Ken will come with his own fly box and 1,376 flies, mostly size 14s and smaller. I can hear it now. "Daddy, can you tie a clincher knot in Ken's leader?"

I can barely do that full scale, so I'll recommend that Ken borrow a spinning rod and some of Barbie's crankbaits.





And then there's Gumbo, a three-year-old fireplug. Kids at that age are the inverse of cats. No matter how you drop them they land on their heads. Finesse is learned at four.

Let me describe Gumbo for you.

Have you ever seen one of those Radio Shack robots that bumps into walls, bounces off, turns, bumps into another wall, beeps, buzzes and blows smoke? That's Gumbo in a bass boat.

The happiest person in the family when Gumbo goes fishing is his mother. She stays home.

Gumbo likes to cast and reel. Constantly. Without pause. The fish that catches his hook will be decisive and outgoing, and likes to hang out under boats. Gumbo's cast goes about four feet.

Gumbo likes action. The most effective ploy I've found with Gumbo is to catch a handful of bluegills and let him race them around the livewell. That's good for at least 15 minutes

And whatever I do, I never, never, never forget his Snoopy float. In my mind, I've plastered a picture of Charlie Brown wearing a hat and trench coat and holding a Snoopy float, saying, "Snoopy floats—don't leave home without them."



Tips

Although fishing with kids sounds just short of impossible, I do have a few tips for you. And believe me, they're based on experience.

First, be sure everyone understands that the capacity of a boat is no more than one kid per adult, regardless of weight. If they overload you, pull the plug.

Second, be sure the kids are spread two rod lengths apart. Otherwise, they get tangled or start sword fighting with your prized graphites.

Finally, do everything you can to get them into action early. Bluegills, crappies, rock bass, perch and size doesn't matter.

Once, I thought I had finally struck paydirt with Gumbo. As soon as we hit the lake, I saw fish splashing and not a boat in sight. It was a school of white bass. I figured we were in line for at least 20 minutes of blinding action.

Steadily, I approached with just the whir of the electric motor disturbing the silence. Still no boats, and still the fish jumped.

Just as I eased up on the school, I heard them. The words that clutch a father's heart, that strike from behind, that close the windpipe as if gripped by the ghost of an ancient arm wrestler, words that conjure fear, remorse, regret, dread.

At the top of his lungs, Gumbo yells, "DADDY, I GOTTA GO TO THE BATHROOM!"



Mosquito Creek: The Acid Facts

by David E. Spotts

I peaked over the bluff that overlooked a nice pool formed by the confluence of Gifford Run and Mosquito Creek. Scanning the stretch of water, I noticed only one small brook trout feeding on emerging insects during my half-hour stay. It was a beautiful day in May and not an angler was in sight along this once-popular trout stream.

Mosquito Creek is a large stream that flows some 20 miles from Elk County to its confluence with the West Branch Susquehanna River at the town of Karthaus, in Clearfield County. The 63.7-square-mile drainage lies almost entirely within the forested area of State Game Lands No. 34 and the Moshannon State Forest. The majority of the underlying geology is classified as the Pocono Group Formation, which is comprised of conglomerate, sandstone and some shales. Unfortunately, this geological type offers low buffering capacity and as a result, acid deposition has taken its toll.

The Fish Commission started stocking Mosquito Creek in 1931 with hatchery-reared brook trout. A stream survey of Mosquito Creek just upstream of its confluence with Gifford Run was conducted by Pennsylvania Cooperative Fish and Wildlife Research Unit (PAFWS) personnel from Penn State University in August 1961. The investigation found 12 species of fish including 59 wild brook trout within 800 feet of stream reach. The pH and total alkalinity (a measure of a water's ability to neutralize acids) were measured to be 6.5 and 6 parts per million (ppm), respectively.

Terminating trout stocking

As part of the Operation FUTURE, Mosquito Creek was extensively studied during August 1979. A sampling station located almost identically to the 1961 survey revealed entirely different results. Two species of fish including only two wild brook trout were collected within a 754-foot area. A pH of 4.8 was recorded, while total alkalinity levels were only 1 ppm. Commission staff had no choice but to make an unpopular decision and terminated trout stocking.

Members of the Mosquito Creek Sportsmen's Association believed "they had lost without being allowed to fight." From 1985 to 1987, the club enthusiastically treated various portions of the Mosquito Creek Drainage by using liming devices to dose the stream with extra alkalinity. The group's goal was to neutralize the natural acidity of Mosquito Creek, which had gradually increased over time, to permit stocking to re-occur and to protect remaining remnant wild trout populations.

Commission and PAFWS personnel evaluated the devices by conducting weekly water quality tests. That's why I was there during that beautiful May day. Although much information was learned, we soon realized that liming flowing bodies of water is expensive, time consuming, and not a reliable cure because mechanical and human error can occur.

The PAFWS has since installed two sophisticated lime dosers within the Mosquito Creek drainage by using funds from Living Lakes, Inc. The purpose of the project is to determine the feasibility and cost of the doser/neutralizing concept and evaluate the overall effects on the stream's aquatic biology.

Typical story

Industrial critics are quick to point out the inconsistencies of comparing different methods of measuring pH and alkalinity levels, but the Mosquito Creek story is straightforward. It is typical of many Pennsylvania waters. Other Clearfield County streams such as Gifford Run, Laurel Run, Sandy Creek, Stone Run, Trout Run and Lick Run have also been removed from the stocking list because of increased acidity.

The Commission has always strongly supported legislation and technology designed to correct acid deposition at the source rather than mitigating its effects in receiving waters. In 1986, the Commission adopted a policy on acid precipitation that urges the passage of federal and state legislation that would reduce emissions of sulfur dioxide and nitrogen oxides. President Bush recently proposed a comprehensive program that would be the first revision to the Clean Air Act since 1977! There now are similar bills floating around Washington, D.C.

It is hopeful that some type of federal legislation will pass in 1990. Proper, effective legislation and associated technological advances are the only real cure to the acid rain problem. This will occur if the public demands it.

If you are concerned with acid deposition, write to both your state and federal legislators demanding their attention and support of proposed legislation. This may be our last chance to revise the Clean Air Act until who-knows-when.



David E. Spotts is a Commission fisheries biologist.







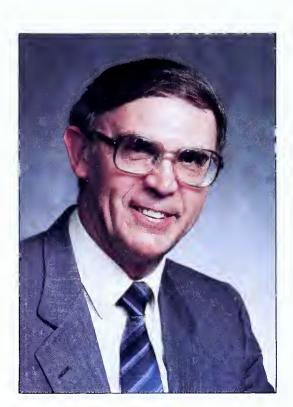
The Pennsylvania Cooperative Fish and Wildlife Research Unit of Penn State is currently evaluating the lime doser (left) on Gifford Run, Elk County, a tributary to Mosquito Creek. Scientists hope to determine whether this treatment can improve water quality so that the stream can support a community of indigenous fish and aquatic life. A similar liming device (above) might help to accomplish the same thing. It's used by the Mosquito Creek Sportsmen's Association. Pictured at top right is Mosquito Creek.





Straight Talk

Conservation Trust Funds: Is Pennsylvania Falling Behind?



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

One of the Fish Commission's most important programs during the past 40 years has been land acquisition and facility development. These efforts, together with gameland acquisition by the Pennsylvania Game Commission, have ensured Pennsylvania's fishermen, boaters and hunters having a variety of public recreation opportunities, not only during their lifetimes, but for future generations.

During a 22-year period (1964 to 1986), the Commission was fortunate to have Federal Land and Water Conservation Funds (LWCF) available to supplement funding of 37 planning, acquisition and development projects. This source of federal funds provided nearly \$5 million to the Commission toward the \$10.3 million cost for these projects.

Thirty fishing and boating access sites were aided by this funding program, including the two largest facilities operated by the Commission, at Walnut Creek on Lake Erie and Frankford Arsenal on the Delaware River.

Six fish culture stations—Pleasant Mount, Huntsdale, Benner Spring, Bellefonte, Corry and Oswayo—were improved, and new lakes were developed in Lancaster County (Speedwell Forge Lake) and Lycoming County (Rose Valley Lake).

Public benefits from these projects have been substantial and will continue to accumulate for decades. However, the Fish Commission has not had federal LWCF conservation funding available for its programs since 1985.

In the June 1989 *Angler*, I described congressional efforts to enact HR 876, entitled "American Heritage Trust Act." This law would provide expanded and self-sustaining funding for the LWCF with a large portion of the money available to the states on a matching-fund basis. Unfortunately, this proposed legislation has bogged down in congressional committees.

Now, we receive word from Washington that the Bush Administration has embraced the idea of a national endowment for conservation activities in the form of a self-sustaining trust fund to expand the LWCF program. This proposed "National Endowment for the Environment" appears to be this Administration's answer to the American Heritage Trust Act. The current endowment proposal is expected to contain provisions for grants to states that could exceed \$300 million annually by 1999.

Pennsylvania needs this federal program. It also needs a companion state program to provide funds to match an expanded LWCF program.

Nine states now have trust funds that are dedicated to the acquisition, development or management of recreation lands and facilities. The fund investment approaches vary. But the important issue is that dedicated funding sources are available from a number of sustaining sources. Two of these nine states, New Jersey and Delaware, border Pennsylvania.

In November 1989, New Jersey voters overwhelmingly supported a \$230 million bond issue that strengthens their efforts. Delaware has legislation pending to apply 25 percent of its realty transfer tax to the Delaware Land and Water Conservation Trust Fund. Illinois, Michigan, Arkansas, Montana, Oregon, Tennessee and Wisconsin are other states that have had the foresight to establish conservation trust funds. Colorado, Maryland, Florida, Vermont and Illinois have created dedicated funding sources through a real estate transfer tax.

Sportsmen, conservationists, environmentalists and citizens, who have a sincere concern for Pennsylvania's ecosystem and future generations, need to unite and require establishment of both federal and Commonwealth self-sustaining conservation trust funds. The future of our children and grandchildren is at stake.



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The covers

This issue's front cover, photographed by Tim Flanigan, shows the kind of trout fishing success we all crave. And speaking of success, if you'd like to taste some walleye action, see page 7, and to be a safer, more efficient boating angler, cruise over to page 11. You'll find more heads-up fishing tips in the story on page 25, and on page 20, check out a fly pattern that could work well for you this season. Lastly, check out the real-life dragnet on page 22.

This issue's back cover shows Main Line Fly Tyers instructor Sam Vigorita demonstrating how to tie a muddler minnow. The photo was taken by Don Douple.

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In a Warmer Light

by Eugene Stewart



For me, though, it was going fishing.

It always began the night before, when I'd snuggle in a little early. Dreams of pulling in the biggest, most silvery fish ever kept time running, and I distinctly remember several times when it seemed I'd done no more than close my eyes before opening them again.

My Mom would come in and touch my shoulder and whisper my name. That'd suffice. Awake as only little boys can be at such ungodly hours, I slipped into shirt and jeans and sneaks as fast as possible, pausing only to make sure my pocket knife was with me. Knives went with fishing like charcoal goes with steak, and often I carried a few, each with a quality that made it arguably indispensable.

Creeping past my sisters' shared room and down the stairs, savoring both darkness and quiet like twin secrets on which depended the fate of the world, I entered the kitchen feeling like an adult. Coffee percolated, eggs and bacon sizzled in the frying pan, and toast sopped up streaks of butter in a stack in the middle of the table. "Eat a good breakfast," my Dad would tell me. "It's got to last you," Mom would add.

While we menfolk packed away the breakfast, my Mom packed us a huge lunch, with sandwiches, apples, cookies, mixed nuts, hard candy and chocolate both, and plastic pitchers of frozen tea and lemonade, which kept things cool and provided icy drinks as they melted. There were jokes about taking enough food and mock complaints about packing the car.

Checking the fishing equipment, which we kept in the basement between trips, was less ritual than rush. Soon I'd be sitting on the station wagon's bench seat watching the darkened road roll under us, counting the ghostly white wooden posts supporting the cables flanking most roads, watching the sky lighten, watching birds on telephone poles or in flight in silhouette, and most of all trying to keep my eyes open and my yawny mouth shut. Playing with the radio knobs helped a little, and pouring Dad a slurp of coffee from the thermos required concentration and a little luck if I meant to do it without spilling, but mostly it was willpower, and those fading dream images of big, powerful fish.

It took us a half-hour to get to my grandparents, and about the same amount of time to visit a little and load more equipment, but soon we were on our way up into the mountains surrounding the Logan Valley and Altoona area. By now, dawn was more than silhouetted early birds. Everything smelled fresh on the chill slice of wind that the wing windows let in. My grandfather's pipe tobacco aura or my father's cigarettes only added spice, and the coffee scents in the car kept things homey.

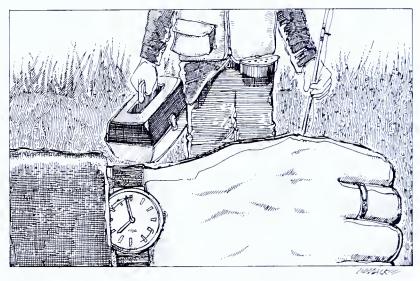
Surging up around curves shaded by laurel and maple, or rushing down slopes that tugged at our stomachs in a way delightful to me at that age, we gradually saw fewer cars and houses, fewer signs of civilization. It was there, of course, almost always within hailing distance, a short march through forested trees over easy terrain, but my senses denied it.

By the time we parked, usually at a widening in the road where the berm had been extended, it seemed late; I'd already been up hours, thinking and anticipating. Distance from the usual world hinted at the removal of modern things, too. As I followed the two adults into the bushes and trees, it was easy to imagine Wapsononnock hunters stalking game, or other tribes planning ambushes or howling, lightning-fast raids.

Carrying my fishing rods was always a problem. If held too high, the tip snagged branches or caught on limbs. If held too low, it was liable to stab the ground, and my forward momentum would bend the rod close to breaking. To do it correctly, I had to watch the center of my Dad's back, and keep the eyelet on the rod tip hovering just behind that bobbing, dodging spot, all the while looking out for roots or loose rocks or dips in the path. To those considerations I usually added my idea of times and peoples long ago.

We crept up on the stream as if it might flee like a deer. Maintaining near silence was important. Fish can hear a pin, or any other man-made thing, even if it's not dropped in the water.

As I sit remembering, I wonder how much of that vital, mystical silence benefited the fish, and how much eased adult ears from boyish yapping, but I know, too, that the sensation of stalking, and the charged abatement of sound to accomplish the wonder of snagging life from a stream, added a reverence to the experience that no amount of talking could have given.



My grandfather's wrist watch dictated when we could wet our lines. It always took forever, and we occupied ourselves with checking gear and picking spots from which to cast. That first instant when your hook breaks the surface tension and penetrates the sparkling mysteries of the water was different from any other instant. We instinctively guarded it with a vigilance of two parts silence and one part lust. My father and I would stare at the tanned wrist with dark hair, at the brown cloth band, and most of all at the glitter of flat gold visible from whatever distance we chose. When that time piece achieved a special configuration, it prompted a single nod from my grandfather.

At that nod we'd begin fishing.

In my early years of fishing, I almost always used worms on a size 8 hook. It was complicated enough for my fingers to manipulate the wriggling thing onto the barb in the recommended way, using what we called "the collar" and letting the worm's tail dangle, and "drowning worms," was the answer I learned to give if anyone asked.

We used canned corn, too, when such bait was in vogue. Only my grandfather employed the elegant magic of hand-tied flies. He'd stand in waders, the water pushing at him as if trying to deny him, and his line would ship back and forth several times until, with a last, delicate flip, the fly, often a Royal

Coachman, kissed the water as lightly as a snowflake. As my worm drowned or my corn kernels were nudged up onto the line to be nibbled by crafty brownies, I watched my grandfather's swift and gentle conjuring. When he perceived a nibble he would set the hook with a grace that was like the counterpoint of a dance between himself and the lucky, chosen fish.

He didn't always fly fish, but when he did, my maternal grandfather showed himself to be, at least momentarily, one with the Pennsylvania version of nature he loved so.

From the first wetting of our lines until lunch we moved only a few yards at a time up or down the stream. Shadowy places under the roots of trees exposed by the water's flow promised Granddaddy trout, while white-frothed rapids laughed at us, or tempted us with glimpsed flashes.

Daydreams swarmed me as did gnats and mosquitoes. In each detail I noticed shimmered the promise of adventure or mystery, while each moment I had to think about such things swelled like a droplet of water on the top of a branch, letting go only at the last and only to make way for another lazy drop. For a boy destined to be a writer, those endless moments beside streams were worlds within worlds.

Fishing, you see, is active. You're not waiting for the fish to bite, you're fishing. And if there's time to daydream, or even catch a few winks like Huck Finn if not Rip Van Winkle, then all the better. But the secret is to keep your mind at least mostly on what you're doing, which is fishing. That old line about thinking like a fish is more leader than a reel of tested poundage.

Usually I'd have snacks stashed in my pockets, like any little boy, but soon they'd be gone and my stomach would growl. If my father didn't come to me, I'd go looking for him. Which adult stood upstream, and which down, was one thing I always made sure I knew.

We'd traipse back to the car and proceed to eat lunch, usually on the tailgate. No food tastes better than lunch after a morning of fishing in mountain streams. Being young, my energy levels rose like dammed water, but my Dad and Pap-Pap often stretched out in the back of the station wagon for a nap. While snores vibrated away their fatigue, I scoured the ground for interesting stones, looked through the tackle box, climbed trees, caught and examined bugs, and even read from the books I almost always carried. I've been an insatiable, undrowned bookworm all my life.

After an hour or so, we entered the woods again, this time ranging farther and trying to find spots no one had ever fished before.

I'd settle on moss or crouch in ferns and drop my line where I imagined a fish to lurk. Almost always this led only to another cast, but now and then there'd be that electric bump on the line. The tip of my rod might or might not dip, depending on the strength of the fish's interest in the bait, but I'd feel it through the line, which I kept between thumb and forefinger of my casting hand, just above the closed-face reel I usually used.

Few sensations are as thrilling as that tug. Knowing another creature's at the other end of that line trying to steal the bait from you, engaging you in a mental challenge and a physical duel, excites parts of the human character as nothing else, as all fishermen know.

Deciding when to snap the line upward with the rod is a delicious agony. For boys, this usually equates to how long they can resist the temptation to try catching the thief. And when your body follows your mind into committing itself, your heart pauses for that second it takes your arms to raise. Often you feel only the weight of the line, but sometimes there's a defiant thrashing, and a struggle ensues.

Raise the tip of the rod, then reel in the slack as you lower it again, all the while trying not to shout with excitement. My muscles would tremble and my heart would pound, and in the back of my mind, calm voices repeated adult advice on what to do and how to handle it.

When a fish is hooked it communicates with the fisherman directly in a way simpler than words, more direct. Despite your vast advantage in size, the fish doesn't show intimidation. Despite the fact that your guile has defeated its stealth, it offers less slack than it usually gets.

Only later do numbers come into play. When catching the limit, you must start at that first tentative nibble, and at that moment even one fish seems unreachably far away.

Playing the fish once it's hooked was serious work for me. Keeping tension in the line often meant taking steps, which meant placing my feet by feel. Stumbling on the slippery bank and even in the edge of the stream resulted, as often as not, in chill water soaking my tennis shoes and the rolled cuffs of my jeans. I remember sitting suddenly many times, and every time I fell my attention stayed on the rod, on holding the rod up.

My grandfather taught me to wet my hand before handling fish. He said this kept our grip from taking away too much of the protective coating all fish wear. He taught me to grip the fish a certain way, and to extract the hook with as little tearing as possible. Most fish we caught were released, and all those we kept became succulent meals.

Taking a personal, small-scale responsibility for any aspect of nature that came within my influence or control was a lesson I learned from the example set by my Dad and my Pap-Pap. Walking through woods meant leaving as little trace of your passing as possible. All woodcraft is respectful, and guests of nature must be, in these days of dwindling wilderness, especially conscientious.

On those fishing trips, my grandfather was usually the champ, as figured in either the number of hooked and landed or the speed with which the limit was reached. My Dad and I, at least a few times, caught the biggest, but we'd count such catches as luck while ascribing my grandfather's creel full of silver to the results of skill.

My grandfather was the champ, but we were all winners, because we got so much more than a mess of fish or a series of delicious meals from our trips into the Pennsylvania woods. Those trees gave us peace and a sense of belonging no societal organization can offer. The streams took our hopes and curiosities, as well as little boys' dreams, and gave back living precious metals and touches of other minds and encounters with other worlds and different times. And the hills and mountains kept it all private. They protected such experiences from too raucous an approach by self-involved civilization, with all its shiny distractions.

For my Dad, it was a relaxing change from chasing a living and fending for his family. For my grandfather, it was an affirmation of beliefs too basic to be cluttered by words. For me, it was going fishing that let me learn to see things in a clearer way, in a warmer light.

Is there a little boy or girl in your life who doesn't own a fishing rod?

Spring Walleye Fling at the Big "P"



Pymatuning is a classic flatland reservoir—wide and shallow with dingy colored water. Fish properly bere and you will catch walleye.

by Darl Black

As the leadhead touched bottom, the thin strand of mono went slack. Instantaneously the line jumped as if it were given an electrical shock. It was not my doing. The green filament moved steadily to the right, guided by some mysterious power. I pointed the graphite wand in the direction of the line as if to cast a counter spell. But instead of a magical chant, I snapped the rod heavenward, bringing my power to bear on the opposing force on the end of the line.

Detecting resistance from its intended snack, the walleye scooted across the shoal for the safety of deeper water. I backreeled as necessary and took up line when possible. With the steady pressure of an arched rod, I delivered the walleye to the landing net.

It wasn't a big 'eye, maybe 18 inches. But it was just the right size for eating. I placed it in the livewell alongside several others.

As darkness silently settled across the lake, I lifted the anchor while my fishing companion started the outboard, and we headed toward the launch ramp. There were six walleye in the well ranging from 15½ inches to a little over 18 inches—four taken by Chub and two by me. We could have kept several other walleye that measured just 15 inches on our board. But even when looking for a walleye dinner, our practice is to release anything that does not break the 15½-inch mark.

It was the first week in April. With the trout opener only a week away, most anglers around the state were anticipating their first fishing trip of the year. But I already had several Pymatuning outings under my belt. I nailed walleye on the last three outings.

Fishing pressure

Situated on the Ohio border in Crawford County, Pymatuning Lake is jointly regulated by Ohio and Pennsylvania. The result is no closed season on walleye. A resident fishing license from either state is





valid while fishing from a boat anywhere on the lake.

No doubt this reciprocal license agreement is a contributing factor to the intensive fishing pressure, drawing anglers from the metropolitan areas of Pittsburgh as well as Cleveland. But the lake's reputation as a springtime walleye producer influences the majority of anglers to visit Pymatuning.

The lake is a classic flatland reservoir—wide and shallow with dingy colored water. Completed in the 1930s, the impoundment has remained very popular with anglers since it opened for fishing.

Pymatuning was the only lake my dad fished regularly when I was a kid. I caught my very first walleye at Pymatuning, and probably have landed more 'eye from this lake than from any other waterway.

There was a period when Pymatuning was referred to as the "Walleye Capital of the World." While the lake has now relinquished that title, the fact remains that if you fish Pymatuning Reservoir properly, you will catch walleye.

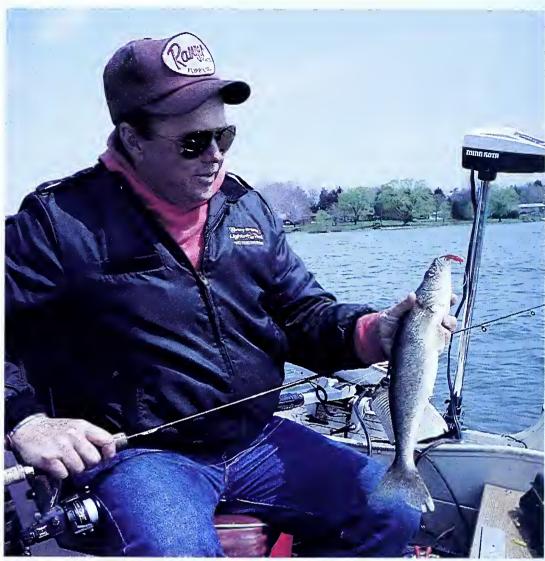
Currently, Pymatuning is known for its vast numbers of walleye, but the average size is considerably smaller than those found in almost any other Pennsylvania lake. The typical keeper walleye at Pymatuning is 15 to 17 inches. Incredible numbers of sub-legal walleye are caught, and I hope, released unharmed. Anglers catch a few 20-inch walleye and an occasional bigger fish.

Early season

Each year sometime in mid-March, the combination of warming weather, high winds, and rain breaks up the ice cover on the lake. Fishing the first week after ice-out is rarely productive. But if the warming trend continues and the water temperature climbs into the low 40s, the wall-eye run begins. However, if air temperatures dip or late-winter storms move into the area, the chances of catching fish evaporate along with the sunny days.

The majority of fish taken between iceout and early May are males. The male walleye hang around the shoals after the females have spawned and have slipped off into deeper water. During daylight hours, these male fish readily take a small jig tipped with a two- to three-inch minnow or piece of nightcrawler. The most productive days are slightly overcast and windy, creating the ideal "walleye chop."

Dave "Chub" Hornstein, a local walleye expert, was responsible for focusing my attention on the early season fishery at



Typical keeper walleye at Pymatuning are 15 to 17 inches, but anglers catch a few 20-inchers and an occasional bigger fish.

Pymatuning a few years ago. Starting the first week in March, Chub drives to the lake every day to monitor the ice breakup. And the first day a ramp is ice-free, he launches his boat.

From ice-out through the end of April, Chub prefers to target rubble gravel shoals that crest between three and six feet. These sites draw spawning and post-spawn walleye. He fishes humps, ridges, and roadbeds in the northern and southern sections of the lake.

On calm days he maneuvers the boat with the electric motor while casting a jig. But on windy days, he drops an anchor upwind and lets the boat drift over the top of the hump.

With a 5½-foot stiff graphite spinning rod and six-pound line, he casts ½-6- or ½-8-ounce jigs tipped with a minnow. His favorite jigs are a Fuzz-E-Grub, Mister Twister, or a crappie-size Gitzit. Through experimentation, he has discovered that the combinations of chartreuse/yellow or orange/black are most productive for dark days, and pink/white for sunny days.

Each cast is returned with either a slow, steady swimming retrieve that almost drags on the bottom, or with a lift-and-drop retrieve that incorporates a three-

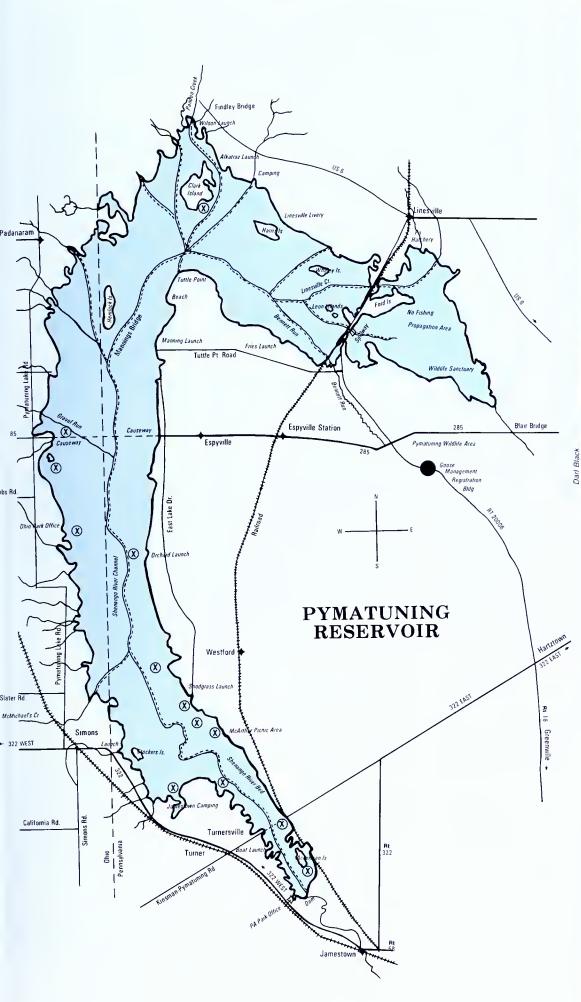
second pause between lifts of the jig. Hits frequently come while the jig rests on the bottom.

St. Patrick's Day

Kevin Dilly is another local walleye fisherman who is out on the water shortly after ice-out. St. Patrick's Day usually marks the beginning of his walleye season. However, Kevin's tactics are somewhat different from Chub's. Kevin arrives at one of his favorite shoreline spots each evening just about the time Chub is coming off the water. Kevin pulls on chest waders, grabs his rod and small case of lures, and then wades carefully out into the surf.

From dusk until an hour or two after dark, he fishes over areas that draw spawning and post-spawn walleye for a night run. These sites include rockpiles and sandbars with two to four feet of water.

His tackle selection is minimal. During the period of dwindling light, Kevin fishes a fathead minnow on a bare stand-up



Man-made structures (Christmas trees, tires, wood pallets) placed by Pa. State Parks, Ohio State Parks, Pymatuning Lake Assn.



jighead. Kevin finds that this special wedge-shaped jig comes through the rocks with fewer hang-ups than a round jighead. He also believes that the plain leadhead with a minnow results in better hookups with 'eye than does a jig dressed with a plastic body.

Once darkness arrives, Kevin switches to a #11 Rapala plug. This lure is retrieved by steadily, but slowly, turning the reel handle so that the plug moves with an enticing side-to-side wobble. His best colors have been silver with a blue back or silver with a chartreuse back.

It is not uncommon for slightly larger walleye to be taken after dark by shoreline anglers than by daytime anglers. Kevin's best 'eye last spring was a six-pounder.

When Kevin first launches his boat for the season, he does not concentrate on the shallower humps like Chub. Instead, he begins drifting over long points that drop onto mid-lake flats, focusing on the 14- to 17-foot depths. Some of these areas may be submerged stump fields, but others are simply barren bottom. His live bait rig consists of a ¹/4-ounce walking sinker and 18-inch snell with a brightly colored floating jighead tipped with a minnow or nightcrawler. According to Kevin, walleye prefer crawlers if the water temperature is above 50 degrees. A heavier sinker is sometimes needed if the wind kicks up.



Late-spring tactics

Sometime in May the early season patterns begin to change. If the water is warming rapidly, both Chub and Kevin switch to trolling crankbaits. Both anglers find the Hot-N-Tot to be their most effective plug for trolling.

The Hot-N-Tot by Storm is without a doubt *the* Pymatuning crankbait for trolling. Why is this particular plug so productive? It may be the outstanding array of color patterns that attract both angler and walleye. Or it may be the running depth of this plug on a 12- or 14-pound-test line that puts it at the magic depth where Pymatuning walleye are concentrated. Or it may just be tradition—everyone trolls them. Whatever the reason, these plugs catch more walleye on the lake than any other crankbait.

Of course, other plugs do a respectable job, too, including Lindy's Shadling, Rapala's Shad Rap, and another favorite from Storm, the Wiggle Wart.

Chub prefers the stump fields in the eight to 10 feet of water in the northern section of the reservoir. Kevin continues to target the deep flats and shoreline points in the middle section of the lake, often fishing for suspended walleye at nine or 10 feet deep over a 20-foot bottom.

At this stage of spring, walleye also begin to show up on some of the man-made habitat that has been placed in the reser-

voir. Christmas tree bundles, tire reefs, and structures of scrap wooden pallets have been part of a structure program to improve walleye and crappie fishing. Some of these structures are as shallow as four feet and others are as deep as 15 feet.

Maps showing the locations of the fish habitat are available from local businesses that are members of the Pymatuning Lake Association.

June walleye also relate to the emerging weedbed edges in two to four feet of water, and to quick-dropping points on the southern-most part of the lake. On days when fish are shallow, jigheads with soft plastic-action tails can quickly put fish in the boat. However, if you must fish deeper than eight feet, a Lindy or Roach live bait rig with a nightcrawler is a better choice.

The depths at which walleye are located in the late spring and early summer on Pymatuning can be confusing for the angler to find. It is possible to catch legal-size walleye in three feet of water as well as 20 feet of water on the same day. An important point to remember is this: Walleye school by year-class. If the spot and depth you are fishing is yielding only 12- to 14-inch walleye, then move. Try a different technique or a different depth at a new location.

The Pymatuning walleye may not be trophies, but you are almost guaranteed some fish when little else is available.

Learning the Lake

With 13,500 acres of water available to fish, it is a good idea to become familiar with Pymatuning before tackling the techniques that produce fish.

The portion of the lake north of the Andover/Espyville Causeway accounts for approximately one-half the total acreage. This section is shallower than the southern section. The maximum depth is about 20 feet. The average depth is between eight and 12 feet. The deep water is limited to areas adjacent to the old river bed. Islands and submerged mid-lake humps or ridges are abundant. Major stump fields are also found in this section.

The area from the Causeway south to around Westford is deeper, averaging probably 12 to 20 feet. The creek channel is defined and may reach a depth of 28 feet. This area is basically deep flats with a few shoreline-connected bars. Shallow mid-lake humps are noticeably absent.

From the Westford area to the dam, Pymatuning shows its most diversified structure. The main river channel is between 25 and 35 feet deep. Feeder creek channels may reach depths of 20 to 25 feet. Although there are fewer islands in this area than in the northern section, there is an incredible number of mid-lake humps and ridges topping off at three to 12 feet. This is in addition to shoreline points and bars. No map shows the necessary details. Study your depthfinder!

Over a dozen boat access areas are located around the lake in Ohio and Pennsylvania. However, many are shallow, making it difficult to launch a boat. The best ramps in Pennsylvania are: Jamestown, west side of the lake adjacent to the Jamestown Boat Livery; Snodgrass, east side near Westford; Manning, east side just below Tuttle Point; and Wilson, northernmost point of the lake. Ohio has several good ramps, including one on the northwest side at Padanaram; one just south of Andover Beach; and one on Lake Road about halfway between the dam and Andover Causeway.

A Boating Angler's ABCs

by Art Michaels

ACCEPT your own limitations and the limits of your tackle and equipment. Know what your boat, motor and fuel capacity can do by design and what they can't do by design.

BRUSH your boat clean. Remember that boat decks can quickly become sloppy while you fish, so you increase your angling efficiency by keeping the deck clean. Wash down during trips and after every excursion. Use a stiff brush to scrub the places where a mechanical washdown or a pail of water won't do the job completely.

CONCENTRATE on piloting your boat. Coast

Guard statistics show that most boating accidents are caused by operator inattention, and that collisions are the most common kind of accident. The dangerous times are when you're heading out and when you're coming home. The dangerous places are crowded spots like harbors, inlets and access areas.

In addition, don't think you're invulnerable because you're an old hand. Coast Guard statistics show that boaters who have been at it for a long time are involved more in accidents than are novice boaters.

Polished boat operating skills can help you put your boat over fishing spots more accurately, and knowing how to negotiate a variety of water conditions can help you get to and from places more comfortably. Practice docking, launching and retrieving in tricky currents and winds. Honing this skill helps you protect your equipment investment in addition to increasing your safety.

DEVISE ways to make your tasks easier, make things work more smoothly and save time. You can get good fodder for this task by keeping an eye on other fishermen's boats. Look at their setups and see if they're doing things that could make your fishing, boating and trailering easier.

Check out how others set up their boats for storing gear and for fishing. Look at the tackle and the electronics. Scan the consoles and cockpits for ingenious, time-saving aids.

Train yourself to observe others in this way and you may be surprised to learn how much useful information you can glean just from using your "educated eye."



Fishermen who operate their electronics skillfully are safer boaters and better anglers than others. Practice using your electronics. Study the owners manual to learn new functions.

EQUIP your boat correctly and thoroughly. You probably have the equipment you need, but when it's time to replace items, be sure you get what's right. Know the legal equipment requirements for your boat, and know what you should have for safety's sake.

For instance, is your anchor really the right size? Do you have enough anchor line? Are your boat fenders the right size, and do you use enough of them? When did you last have that fire extinguisher checked? What's the condition of your fuel lines and steering cable? Is it time to replace your flares?

If you have a question on boating safety, especially an inquiry about federal requirements, call the U.S. Coast Guard Boating Safety Hotline for answers and information. The number is 1-800-368-5647.

When you renewed your boat registration, or when you initially register a boat, you receive the latest copy of the *Summary of Boating Regulations*. If you need a new copy, contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673. Include a business-sized stamped, self-addressed envelope with requests.

FORECAST often. Use your fishing and boating skills to predict where and when you'll find good action.

Tap your resources to forecast the weather and water conditions, and act accordingly. Do you own a weather radio for your home use? Keeping a close eye on weather systems and understanding how fish are affected by the weather can help you decide when to go fishing.

as an angler and a boater. Find out from local bait shops where you can find good fishing in spots you've never tried. Experiment with new fishing methods. Give new gadgets and equipment a fair shake. Share your know-how with others, and learn from them.

Here pother boaters learn new skills, especially the young and other novices. Set an example.

INSPECT your boat and equipment regularly. Torn PFDs or ones in poor condition don't work properly and can't be counted toward the legal requirement. Rusted hooks and old line won't catch fish, and a dead battery is exactly what you don't need six miles from the launch ramp.

John boating, fishing and conservation groups. These organizations can help you reap benefits as nothing else can. In strength your political voice can be loudest.

In boating and fishing clubs you can also find new friends, gain fishing know-how and learn the locations of some top-producing secret spots.

how to tie a half-dozen or so knots. You don't need a college degree in knot-tying to be a better fisherman and boater. All it takes is knowing how to tie several knots well for a few different applications. Even if you're happy with your knot-tying skills, try learning one or two new ones each season.

LEARN to operate your electronics skillfully. Considering the price and versatility of electronics, it pays to learn to use them proficiently. Fishermen who can operate their loran units, VHF radios and depthsounders well are better fishermen and boaters than are those who are less skilled with this gear.

Take time to practice using your electronics. Read and reread the owner's manuals, and learn new functions regularly on each electronic item.

AINTAIN your boat, motor and trailer. Routine preventive maintenance saves a lot of money in the long run. Neglect your equipment and sooner or later you will pay dearly. Where do trailer boatmen have the most frequent problems? The hubs.

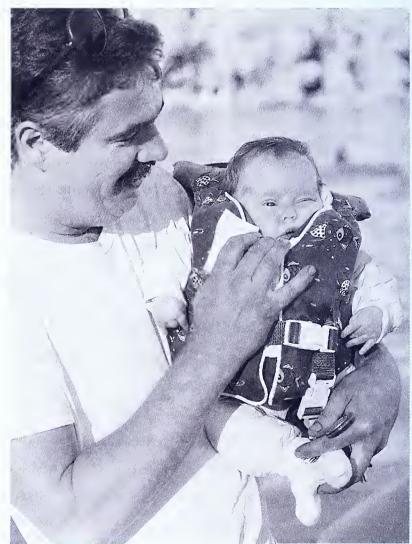
NURTURE the fishing and boating skills at which you're weakest. Take time to bone up on these fishing and boating skills. Do you know how to plot a course on a chart and determine your position? How well do you back up your trailer and tow vehicle? Do you know how to tow a disabled boat properly back to port?

Taking a boating course is a terrific way to sharpen your boating skills, whether you're a novice or an old hand. The U.S. Power Squadrons, Coast Guard Auxiliary and American Red Cross conduct excellent courses.

The Fish Commission also offers a correspondence course through its 84-page study guide, *Pennsylvania Basic Boating*. Copies cost \$2 postpaid. Contact the Commission at the address above.

ORGANIZE everything on your boat. Have you ever found an item on your boat that you forgot you had? Have you ever tried to find something on your boat and couldn't remember where it is?

Make sure your equipment is placed where you can find it. Every so often go through your boat's storage areas to keep tabs on what's there, what needs to be replaced, what needs to be added, and what needs to be removed from the boat.



your PFD in a small boat, and insist that everyone aboard your boat does the same. Even though having a life jacket aboard and readily available satisfies the legal requirement in many cases, a PFD is practically worthless unless it's worn. Both Fish Commission and



Coast Guard accident statistics suggest that many boating accident victims could have survived had they been wearing their PFDs.

Wearing a PFD is certainly no guarantee that you'd survive an accident. But the fact is, wearing the device when you end up suddenly and unexpectedly in the water would probably keep you up enough in the water long enough so that you can gather your wits and effect your own rescue.

QUESTION what you don't understand about your boat—how it's built, how things work and why things happen as they do. When you understand why things work the way they do, you gain more control over the boat, and you can become a better fisherman and boater by using the equipment more skillfully.

Similarly, question what you don't understand about fishing and boating. The more you learn and understand, the more successful your trips will be.

ROUTINIZE as much as you can. Work from a checklist when you go fishing, as airplane pilots use a checklist to take off and land. Make a list of everything you need to bring on a trip, and make different lists for different kinds of fishing trips. Lists can eliminate your forgetting things on trips.

STUDY navigation charts and learn to identify navigation aids. You ought to be able to identify navigation aids day and night.

TRAVEL to new fishing spots. If you trailer your boat, finding new places can breathe freshness into your fishing. Set a goal of finding new spots each season. Talk to tackle shop and marina personnel to help steer you in the right direction.

UNDERSTAND the nautical rules of the road. Learn to "see ahead" and anticipate other boaters' courses and actions. Study the rules of the road to know who has the right of way in various boating situations. Don't assume that other boaters know the rules of the road as well as you might.

VEST some knowledge in your fishing partners on how to operate your boat. If you become incapacitated, someone aboard your boat will have to pilot the craft home, and someone might also have to use the VHF radio to summon help.

WATCH your wake, and watch out for damaging wakes others might cause. In a small boat, come about and quarter into a gigantic overtaking surge. Slow down when you cut through an oncoming wake, again quartering the boat. Then resume your original course and go about your business.

The danger zones for wakes are usually crowded spots like access areas and narrow inlets bordered by rock walls and bulkheads. Crowded places are dangerous because many boats create many wakes, and rocky inlet walls and bulkheads telegraph wakes without diminishing their intensity.

Observing no-wake, minimum-height-swell rules is vital to everyone's safety. The choice is simple. Either we obey the rules or more stringent regulations will have to be enacted.

stands for what's unknown. Safe boating anglers realize that they don't know everything. That's why they approach fishing in a boat cautiously and defensively. Always pilot your craft as if the other boater out there knows nothing about piloting.

The unknown also holds fishing and boating thrills. Breathtaking sunrises and sunsets, unusually big fish, remarkably calm weather, great company aboard your boat—these things and other unexpected pleasures keep you coming back for more. Anticipate enjoying them.

You have to juggle all the elements that keep fun and safety balanced.

ZAP your boating and fishing with zest. Take on a new challenge. Try for an unfamiliar species. Fish with a new method. Rediscover an old strategy you left behind years ago. Putting zing into your fishing and boating makes them more fun, more challenging and more rewarding.

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Aquatic Quiz— How's your A Q?

Circle your answer to these questions and then check the answers below.

1. Which river forms the boundary between Pennsylvania and New Jersey?

Allegheny **Delaware Potomac**

2. Pennsylvania's official state fish is the:

Smallmouth bass **Brown trout** Brook trout

3. Which poisonous snake is not native to Pennsylvania?

Cottonmouth Copperhead Massasauga

4. Of the three turtles listed, which one is the biggest?

Box Wood **Snapping**

5. The daily limit of muskellunge a Pennsylvania angler can keep is:

6. Which Pennsylvania fish travels the longest distance to spawn?

American shad Muskellunge Coho salmon

7. Which is the best way to tell a poisonous from a non-poisonous snake in Pennsylvania? Size Eye shape Color

8. Which is the largest Pennsylvania catfish?

Flathead Bullhead

9. Which animal is not an amphibian?

Hellbender Skink Mudpuppy

10. The largest member of Pennsylvania's pike family is the:

Chain pickerel Northern pike Muskellunge

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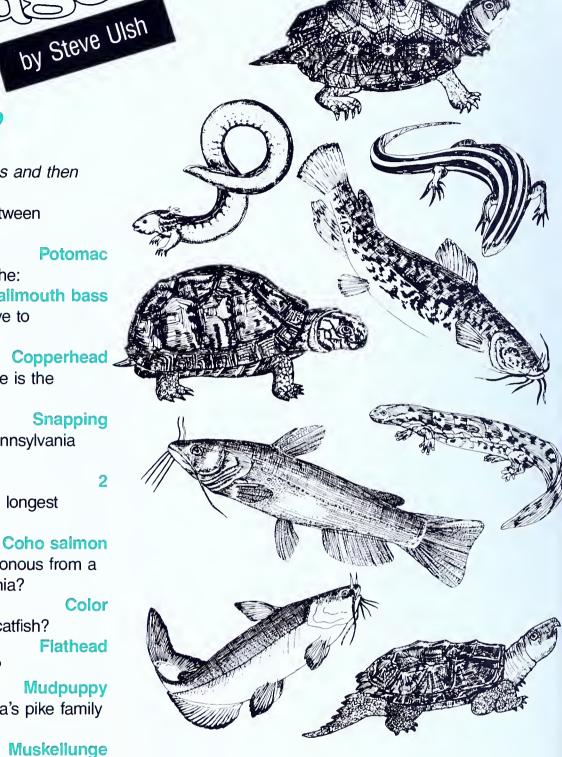
The Pennsylvania League of Angling Youth is an educational program specifically designed to reach youngsters. Members receive a colorful jacket patch, a quarterly newsletter, special Fish Commission publications and access to the PLAY Correspondence Center.

Answers to Aquatic Quiz

- 3. Cottonmouth
- Brook trout Delaware
- 6. American shad
- Two
- Snapping
- 10. Muskellunge

2

- Skink
- Flathead
- Eye shape



Enclosed is \$2.00 (check or money order). Please enroll me in P.L.A.Y.

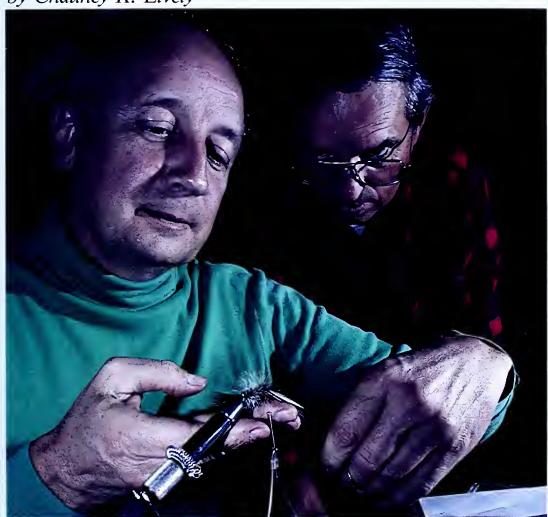
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Send to P.L.A.Y., Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

State

A Start-up Guide to Fly Tying

by Chauncy K. Lively



Main Line Fly Tyers Club members (above) share and teach their skills. Trout Unlimited and Federation of Fly Fishers chapters also conduct classes.

Fly tying has experienced an unprecedented upsurge in interest in the past two decades. There are so many anglers who tie their own flies now, we almost automatically assume that an accomplished fly rod angler is also a fly tyer. Of course, this is not always the case, but the perception remains strong.

When I began tying flies over 40 years ago, the situation was quite different. We didn't have such organizations as Trout Unlimited and the Federation of Fly Fishers to offer instruction, and indeed, it was difficult in some areas to locate anyone with a knowledge of the craft. The publication of new fishing books was sparse and in the few that embraced fly fishing, fly tying was generally given little more than casual mention. There was an esoteric air of mystery surrounding the craft, almost as if flies were the product of a sorcerer's brew.

I was fortunate. After the end of World War II, the tackle department of a large Pittsburgh department store offered a course in fly tying, and under the thought-

ful, expert tutelage of Jim Boyer, a large group of us—all frustrated, would-be feather-twirlers—were started on our way. In the 1940s, George Harvey began his celebrated fly tying courses at Penn State University and fly tying was off and running in Pennsylvania.

Nowadays, virtually anyone interested in learning to tie flies can do so painlessly. However, if you are the cautious type, perhaps you'll seek the answers to several questions before committing yourself. Typical areas of concern and their resolution include the following.

Q: Must one have delicate hand to tie flies successfully?

A: No. I've seen beautiful examples of tiny flies dressed by tyers with stubby, gnarled fingers accustomed to manual labor. The hands of a concert pianist—or of

a surgeon—are not a requirement. However, rough skin sometimes frays tying thread, and many tyers regularly use hand cream to smooth the rough spots.

Q: Like everything else, the prices of commercially tied flies continue to rise. How much can I save by tying my own flies?

A: It depends. On a "per-fly" basis, you can generally save about 90 percent or more. This presumes you have purchased materials prudently and used them without undue waste. Most of us are guilty of occasionally purchasing a batch of untried material with which we intend to experiment, and when we find it falls below our expectations, we discard it. This tends to reduce the overall cost-effectiveness. However, if you fish regularly, tying your own flies can save a substantial sum over the years.

Q: Will it cost me a bundle for the necessary tools to get started?

A: Tools will likely be your biggest investment, but you shouldn't have to mortgage the homestead to finance them. A fly vice may cost as little as \$15 for a relatively simple but serviceable model. If you require the latest in high-tech, state-of-theart equipment, you may spend several hundred dollars. Just remember that the primary function of the vise, regardless of its cost, is to hold the hook securely. It's the tyer who must dress the fly, not the vise. A good vise will last many years and it is sometimes possible to purchase a used one from a friend who has opted for a newer model.

You'll also need hackle pliers, fine-pointed scissors and a dubbing needle (bodkin). I've always felt strongly that every fly tyer should be able to perform a whip finish by hand, but there are inexpensive whip finishing tools available and many tyers use them. There are other convenient tools, such as tweezers, which are not required initially but are often acquired later on. And once you begin tying, you'll probably find useful adaptations of gadgets manufactured for other purposes.

Once, while browsing in an army surplus store, I spotted a tray of dental tools, including picks, hooks and small mirrors, all mounted on five-inch metal handles. I purchased one each at bargain prices and they have proven remarkably useful.

Q: Now that I've decided to take the plunge into fly tying, how do I get started? A: First, you'll want the best instruction you can find. If you have a friend or relative who is a competent fly tyer, perhaps you can persuade that person to teach you. Individual instruction is the best kind because the instructor gives you 100 percent of his attention.

Local Trout Unlimited and Federation of Fly Fishers chapters generally offer excellent fly tying classes for a small fee at certain times of the year, usually in late winter. Instructors for these organizations are often bonafide experts who not only teach fly tying but offer liberal doses of stream entomology and conservation as well. Your local fly shop will have information about upcoming classes. In fact, many fly shops offer courses of their own.

I think more colleges and universities will follow Penn State's lead in offering fly tying, either for credit or as extracurricular courses. There are also high schools offering similar classes.

Assembling materials for one's kit is often one of the most confusing aspects for beginners because a tremendous array of materials is available. If you are a hunter you may collect a variety of furs and hair from animals and plumage from game birds, depending on the scope of your hunting. Or a hunter friend may be a source. Most fly shops carry excellent stocks of materials and their personnel are almost always generous with their advice. It is prudent for a beginner to limit initial purchases to essentials. As your skills develop, you become better able to select materials suited to your needs.

Hooks

Certain hooks are more versatile than others. I recommend Mustad's 94840 as a general all-purpose hook for both wet and dry flies. Sizes 10 through 18 cover most beginners' requirements. The long-shank Mustad 79580 in sizes 6 through 10 is a good choice for dressing streamer flies.

As you progress and your focus takes specific directions, you will probably want some specialty hooks designed for midges, bass bugs or other uses. There are dozens of models from which to choose, manufactured in the U.S., England, France, Norway and Japan. Hooks are commonly marketed in lots of 12, 25, or 50, or in boxes of 100.





Hackle

Most flies use hackles, the long, narrow feathers found on the cape (neck) and back of a chicken. Dry flies are tied with stiff hackles from the cape (and sometimes the saddle) of a rooster. Wet flies generally require the soft, webby hackles from a hen's cape. A well-rounded set of rooster capes includes the colors of brown, grizzly (barred rock), ginger or cream, and dun (dyed gray).

For starters, choose imported capes for their lower cost. After you have achieved a respectable degree of proficiency, you may want to "shoot the works" and purchase some high-quality (and expensive) genetic capes of domestic origin.

For wet flies, choose inexpensive hen capes in the same colors. You can save cash by jointly purchasing capes with a friend and cutting them in half along their lengths.



Wings

Most standard patterns, both dry and wet, use wings of either duck quill sections or bunched fibers from wood duck flank feathers. For these you need several matched pairs of duck primary wing feathers and a packet of dyed mallard flank feathers (imitation wood duck). For soft-hackle wet flies and nymphs, you need speckled partridge or grouse breast feathers.

Fur

Fur is the most common body material for both dries and wets. Synthetic furs are currently very popular and they are available in many hues. Choose the finest-textured synthetics you can get in brown, yellow, cream, olive and black. A package of muskrat fur rounds out your initial fur supply. You need tacky wax to apply fur to the thread.

Prudent beginners limit their purchases to essentials. As your skills develop, you become better able to select materials suited to your needs.

Choose flat, silver mylar tinsel in medium width for streamer bodies. Fine copper wire found in a discarded lamp cord is an ideal ribbing material and a good substitute for the gold wire specified in various patterns. For the Coachman, Royal Coachman and other patterns, you need a supply of peacock herl.

One of the newest and most versatile body materials is evasote foam, often marketed as Fly Foam. It is offered in ½-inch thick sheets, and although it is available in several colors, many tyers use white foam and tint it to suit with a marking pen. Initially, you need black and brown permanent marking pens.

Deer hair has many uses in fly tying. You need a natural bucktail, from which you'll get long, thin hairs in brown and white for streamers and dry fly hair wings. You'll also want a square of fawn-colored coarse body hair for caddis wings and spun hair bodies. Both bucktails and body hair are also available in dyed colors.

Marabou feathers have barbs that are soft, webby and act alive in the water. They make effective wings for streamers. White is the most commonly used color, but if you can find a packet of these feathers in an assortment of colors, you'll find them all useful.

Thread

To round out your materials, you need several spools of thread. I suggest a spool each of Danville prewaxed thread, 6/0, in black and white, a spool of 4/0 black Monocord, and for heavy duty work, a spool of size A Nymo in a color of your choice. A bobbin holds your thread and provides a "handle" to allow you to guide the thread easily and accurately. Bobbins offer easy interchange of thread spools, permitting a quick change of color or strength.

Concentrate on simple patterns until you can dress them with ease and consistency.

Here is a suggested list of simple patterns that are also effective fish-catchers all over the Keystone state:

Dry Flies: Foam Beetle, Foam Flying Ant, Light Cahill, and Hairwing Caddis.

Subsurface Flies: Leadwing Coachman, Partridge Spider (Soft Hackle), Muskrat Nymph, and White Marabou Streamer. Watch for articles about the Foam Beetle and Foam Flying Ant in this issue and in future *Angler* issues.

Well-illustrated books are most helpful to novice tyers. They go a long way toward clearing up some of the troublesome problems we all encounter. Today there are many such books by recognized experts and most fly shops carry well-rounded stocks.

Here are a few—all published by Nick Lyons Books: Art Flick's Master Fly Tying Guide, by Art Flick; The Fly Tyer's Almanac, by Robert H. Boyle and Dave Whitlock; The Fly Tyer's Primer, by Richard Talleur; Fly Tying, by Helen Shaw; and Paul Jorgensen's Modern Trout Flies, by Paul Jorgensen.—CKL



Earth Day 1990: You Can Make a Difference

by Jay D. Hair



Jav D. Hair

If you want to become involved in Earth Day events and projects, contact the organization "Earth Day 1990" in Palo Alto, California at (415) 321-1990.

unning through the hills of Pennsylvania's southcentral dairy farm lands, the Juniata River is a perfect spot for catching smallmouth bass and muskies. For trout fishing in jagged mountain solitude, Little Pine Creek in the northcentral part of the state comes to mind. I have many fond memories of summer days spent fishing on White Clay Creek behind my parents' home in Chester County, where they have lived since 1957.

Any angler who visits the Keystone State will be impressed with its plentiful and varied aquatic resources. What some anglers might not realize, however, is that aquatic resources in Pennsylvania and nationwide are in jeopardy. The enemies include acid rain, industrial pollution and rampant wetlands loss.

It was about 20 years ago—in the late 1960s and early 1970s—that the problems began to show up when rainbow trout died shortly after being stocked in certain Pennsylvania streams. Also about 20 years ago, the nation celebrated the first Earth Day. Today, as we celebrate Earth Day 1990 on April 22, we know exactly why

Some anglers might not realize that Pennsylvania's aquatic resources are in jeopardy. The enemies include acid rain, industrial pollution and rampant wetlands loss.



those rainbow trout were dying. Acid rain had begun to take its toll.

Statewide, Pennsylvania has about 10,000 miles of naturally reproducing and stocked trout streams. The smaller headwater streams are under direct pressure and are being seriously degraded by acid rain.

In the southwestern part of the state, on Laurel Ridge in Somerset County, there are 61 small watersheds with natural brook trout reproduction. A few of the streams have been affected by nearby development. The rest come off forest lands. In a study conducted by the Fish Commission, 10 of those streams had no fish at all, and 23 were under duress when it rained or if there was a snow melt. Between 50 and 60 percent of the small watersheds on Laurel Ridge were affected by acid rain.

Acid rain is formed in a combination of emissions of sulfur dioxide and nitrogen oxides, which result primarily from coal-burning power plants. It hits forests and waterways in various forms of precipitation, such as rain and snow, or dust. The effects on fish in Laurel Ridge streams are just one example of how acid rain affects aquatic life.

Wetlands

Pennsylvania anglers also need to be aware of other problems facing their fishing spots, such as the destruction of wetlands and degraded water quality.

Experts at the U.S. Fish and Wildlife Service estimate that Pennsylvania loses more than 1,000 acres of wetlands a year. The hardest hit areas are in the southeast, with suburban development near Philadelphia; the northeast, where the Poconos are a convenient commute from New York City; and in the northwest, where development concentration is also increasing.

Nationwide, wetlands loss is such a serious problem that President Bush has endorsed the idea of no net loss, an approach developed and promoted by the National Wildlife Federation. Between the mid-1950s and the mid-1970s, the United States lost an estimated 458,000 acres of wetlands each year, mostly from development and agriculture. This loss continues today at a rate of 300,000 to 500,000 acres annually. We have less than half the wetlands in the United States that we had when the early settlers landed.

Beyond their worth to anglers for good fishing, wetlands are among the richest wildlife habitats, and they are important for controlling flooding and purifying water supplies.



Put your thoughts on paper and get them to your state legislators and your representatives in Congress.

Urge your federal representatives to support strong amendments to the Clean Air Act that will end acid precipitation.

Water quality

As for water quality, Pennsylvania has lost miles of productive fishing waters, principally because of coal mining and acid mind drainage. One example is the Conemaugh River, in the southwestern part of the state. Acid drainage from coal mining has completely degraded the river. The Conemaugh should be a classic warmwater fishery, with smallmouth bass, bullheads, catfish, sunfish and yellow perch. No fish can live there now.

Anglers who are in close touch with the aquatic resources of Pennsylvania are in a perfect position to really *make a difference* and turn the tide on this type of environmental degradation. The phrase, "You can make a difference," is going to be heard a lot during the next decade. In fact, Earth Day 1990 will launch the Decade of the Environment, during which individuals from all walks of life will make a difference.

How can anglers help?

Put your thoughts on paper and get them to your state legislators and your representatives in Congress. Specifically urge your federal representatives to support strong amendments to the Clean Air Act that will end acid precipitation. These amendments should call for a 10 million ton reduction in sulfur dioxide emissions and a four million ton reduction in nitrogen oxides.

On a more local level, you can keep your eyes open for incidents of water pollution or wetlands destruction and let the proper officials know. For water pollution, call the Fish Commission's Water Pollution Hotline at 1-800-854-7365. If you discover a wetland being filled in, and it's in Chester, Berks, Northampton, Monroe or Pike County, call the U.S. Fish and Wildlife Service at (814) 234-4090. For other areas, contact the nearest U.S. Army Corps of Engineers office.

Your vigilance will make a tremendous difference, but it will win only half the battle. At the same time, we must not leave a legacy of destruction and pollution for our children and grandchildren. To achieve this, we all must become better environmentally educated.

KARE

The Fish Commission has an exemplary environmental education program on water resources that focuses on streams, lakes, and rivers. Called KARE, Keystone Aquatic Resources Education, the program was started in January 1989. It provides formal environmental education for teachers and it is targeted for use by schools. But it can also be adapted easily for use by camps, clubs, youth groups and adult organizations. Through KARE, training workshops are offered throughout the state to distribute materials and show how to use them most effectively. The Fish Commission has developed a fishing skills portion of KARE, with emphasis on reaching urban areas.

We need more and more such programs, and communities need to take advantage of them. Anglers who volunteer to share their knowledge and appreciation for the outdoors can make invaluable contributions to the future well-being of our environment. The Fish Commission needs volunteers to help get its KARE program to communities.

Pennsylvania also happens to be one of the most progressive states so far in Earth Day programs. These programs also can always use more volunteers.

Keeping a watchful eye out for harm done to our natural resources and educating our society on how to use these resources without destroying them are responsibilities for us all. Anyone who has seen the morning mist rise on the beautiful Juniata, or pulled a trout from a clear mountain stream, knows that this is a responsibility worth taking seriously.

PA

Jay D. Hair is president of the National Wildlife Federation.

A Foam Beetle



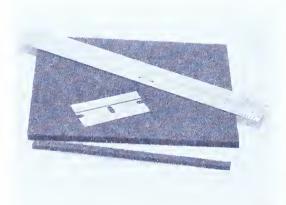
by Chauncy K. Lively photos by the author

The order Coleoptera, embracing more than a quarter-million beetle species worldwide, is the largest of all the insect orders. Beetles are found in virtually all parts of the world, and their habitats are nearly as diverse as their types. They are found in or on the ground, under bark, stones, leaves and other forms of concealment, and are often present in rotting vegetation, fungi and carrion.

Despite the widespread distribution of

Despite the widespread distribution of beetles, in the long history of fly fishing, anglers have generally been slow to accept these insects as prototypes in artificial flies. Although early English anglers had a pattern or two they called "beetles," on the water their form and posture more closely resembled mayflies than the squat, flush-floating forms we have come to accept.

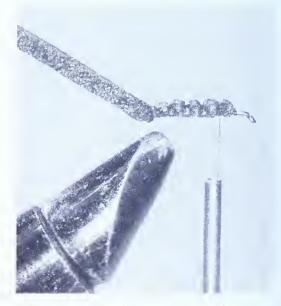
It wasn't until after World War II when two Pennsylvanians, each working independently of the other, developed beetle patterns that changed the course of fishing terrestrial dry flies. John Crowe, fishing the woodland streams of northwestern Pennsylvania, came up with a simple pattern fashioned entirely of black deer hair. He fastened the butts of a smallish bundle of hair to the top of the hook shank, butts forward and the hair parallel to the shank. Then he folded the hair forward and tied it off behind the eye. A few hairs were bound back along the sides to represent legs, and the balance of the excess hair was trimmed off. The finished fly was ovoid and closely resembled the common



1 From a ¹/8-inch thick sheet of black evasote (Fly Foam) cut a strip ⁵/₃₂-inch wide.



2 Clamp a regular shank, dry fly hook (size 14 shown) in your vise and tie in black 6/0 prewaxed thread behind the eye. Wind the thread in slightly spaced turns toward the bend. At the bend, reverse direction and wind diagonal turns to the original tie-in.



3 Position the foam strip over the shank and tie in one end 1/8-inch behind the eye. Bind the foam to the shank with firm, spaced turns to the bend. Then wind it with similar spacing back to the tie-in point. Trim the excess foam over the eye.

ground beetle in color and form.

Meanwhile, Vince Marinaro and his friend Charlie Fox were observing with great interest the invasion of the Japanese beetle into the Cumberland Valley and the meadows along the Letort. Anticipating that substantial numbers of beetles would blunder into the stream, Fox devised (and later discarded) an artificial consisting of a slotted coffee bean glued to the body of a wingless wet fly. Marinaro's beetle was really an enlarged version of his jassid—a jungle cock eye positioned flat over a spray of palmer-wound hackle trimmed top and bottom. Its low-floating posture and silhouette proved deadly on the Letort.

Mind you, this was happening in the 1940s when the mention of a dry fly meant the likes of a Cahill, Pale Evening Dun or perhaps an Adams—all tied traditionally with collar-type hackles intended to float the fly "high on its toes." Indeed, scant attention was paid to representing caddis flies and stoneflies as dry flies, even though on certain streams they were more plentiful than mayflies. Traditions die hard, and frankly, were it not for George Aiken, I probably would never have tried the Crowe Beetle. It simply didn't *look* like a dry fly.

We were fishing a Centre County stream on the last day of the season (in those days the trout season ended July 31), and we were doing badly. Several good browns were rising along a log and nothing we showed them elicited the faintest interest.

Finally, late in the day, George tied on a Crowe Beetle as a last resort. It was the first time he had tried the pattern and its debut left a deep impression on two frustrated Pittsburgh fly fishermen. The same trout that had turned up their noses to everything we offered them now pounced on George's beetle as if they had waited for it all day.

Needless to say, Crowe Beetles were now my number one priority and before the following season opened an extravagant number were born in my vise. It wasn't long before they lived up to their promise, and I found myself singing their praises to anyone who would listen.

I gave a few to several fishing chums, and one day on a Fayette County stream I came across one such friend. With animated enthusiasm he described his success with the new flies. Then he raised his rod tip to show me the beetle at the end of his tippet. Clamped to his leader a foot above the fly was a splitshot! I had neglected to tell him that the Crowe Beetle is a dry fly, but it is to its credit that the pattern fishes well both wet and dry.

We've come a long way in the past 40odd years. Nowadays, the average dry fly box contains many flies that formerly would have been considered odd-ball. Few crawling, hopping or flying critters have escaped the attention of today's fly tiers, and surprising numbers of diverse patterns interest trout and panfish.

The new foam materials such as evasote or Fly Foam are wonderfully adaptable to

the dressing of terrestrials. In fact, a single strip of this material may be manipulated in the same manner as a bundle of hair. It offers additional benefits as well, because it's more durable and provides much buoyancy. Best of all, it is easy to work with, making it possible for the rankest novice to produce effective, fish-getting flies quickly.

The Foam Beetle uses a single strip of evasote 5/32-inch wide, cut from a sheet of 1/8-inch thickness. Because it is possible to stretch and compress this foam, a 5/32inch strip will serve for hook sizes 12 through 16. For larger or smaller patterns, use proportionately wider or narrower strips. In this dressing, I use black Fly Foam, but similar results are obtained with a strip of white evasote tinted with a permanent black marking pen. The only additional materials required for this pattern are four black-dyed deer body hairs for legs. Four hairs make eight legs and yes, beetles have six legs, but the extras will compensate for the inevitable breakage of the fragile hair. However, the legs may be strengthened by applying two coats of thin Flexament to each hair.

The Foam Beetle has practically no weight and little air resistance, making it easy to cast with light rods. Use long, fine leaders and expect trout—even big trout—to take the fly with a gentleness that often belies the size of the fish. The pattern is a superb floater as is, but it can be made even better by working a little paste dressing into the body with the fingertips.



For legs (top view), select four heavy black deer body hairs and tie them in as shown under the shank. Apply a drop of cement where the hairs meet the shank and trim the ends of the hair to the desired length. Bring the thread forward of the legs.



5 Bring the foam strip up and over the shank, stretch it a little and tie it off behind the eye with four turns. Stretch the free end of the foam and trim it off behind the eye.



6 Wind a neat head, whip-finish and lacquer the head.

Paying the Price for Pollution

by Chris Porter

With an oil company refinery in town, residents of the tiny borough of Rouseville in Venango County are accustomed to smelling unusual, unpleasant odors. But on August 8, 1988, as the sun was setting on a mild summer day, something unmistakably different was in the air. It caused headaches, dizziness and skin irritations, and several Rouseville residents reported suffering minor illnesses from the acrid fumes.

If the thin, white film on the surface of Cherry Run hadn't given away the source of the problem, then hundreds of dead fish tumbling down the creek would have. A pollution was in progress.

State police blocked a two-mile section of Route 227 along the stream as troopers and Rouseville volunteer firefighters temporarily evacuated some homes and businesses in the area. At the same time, investigators from the Fish Commission and Department of Environmental Resources (DER) began probing the cause of the incident. It would become, in the words of Venango County WCO Bob Steiner, "the best, most thorough investigation I've ever been involved in."

Fish Commission and DER investigators worked virtually all night gathering evidence, which is considered essential in prosecuting pollution cases. They collected water samples from various sites along the stream, took notes from visual and other observations at the scene, counted dead fish, and documented their work with a series of photographs.

Also that night, Steiner began interviewing residents of nearby homes and talked to several drivers at the oil company truck terminal a little over a mile upstream from where Cherry Run empties into Oil Creek. Investigators eventually interviewed 20 to 25 persons as they attempted to build a case that they could win in court.

Common substance

The next day, with some borough residents still complaining of headaches and dizziness, there was some concern that investigators were dealing with a highly toxic material that could cause lingering health problems and that might be tough to identify. Sophisticated tests completed August 10 at the DER laboratory in Harrisburg showed that the pollutant was an unexpectedly common substance, gasoline, but that from all indications, a sizable volume of it had gotten into the creek.

Evidence gathered later in the investigation showed that about 300 gallons had been dumped into the run, which is no wider than seven or eight feet in most sections. Mixed with such a small volume of water, the fuel extracted an awful toll. It killed an estimated 2,000 trout in a 1.2-mile section of the creek, mostly wild brown trout, including some trophy fish over 20 inches long. The disaster also wiped out all other aquatic species in the stream, including minnows, crayfish and insects, leaving its lower reaches without any living creature.

Steiner said the fuel also killed some fish in Oil Creek as far as 200 yards downstream from the mouth of Cherry run before water in the larger stream sufficiently diluted the pollutant.

Making this disaster even more tragic was the fact that Cherry Run is one of Pennsylvania's prized Class A trout streams. Class A designation means that a stream is a high-quality waterway capable of sustaining a viable population of wild trout and thus is not included in the Fish Commission's stocking program.

Local anglers who had all but forgotten about Cherry Run when the Fish Commission quit stocking it several years ago were more than a little surprised to hear that it still held such a fine population of trout.

Major loss

"There was a phenomenal number of wild brown trout in the creek. This was a major loss economically, environmentally and recreationally," said Steiner, who spent about 100 hours on the case over a two-month period.

"It involved a fish kill, a large quantity of volatile, extremely toxic material, it was a Class A stream, and there were public health risks. It was a major pollution," said fisheries biologist John Arway, chief of the Fish Commission Division of Environmental Services at Bellefonte.

Some valuable assistance from state police criminal investigators at the nearby Seneca Barracks and from the oil company's own detective helped the Fish Commission and DER piece together convincing evidence pointing to a deliberate, criminal act as the cause of the pollution.

With the probe headed in that direction, DER summoned agents from the Environmental Crimes Section (ECS) of the state attorney general's office to oversee completion of the investigation and to handle the prosecution. Deputy State Attorney General Donna McClelland was assigned to prosecute the case for ECS, which generally gets involved only in major pollution cases involving criminal violations.

Oil company officials at first were hesitant to acknowledge that any of the firm's vehicles or personnel may have been involved in the dumping, but once they were convinced otherwise, the corporation's detective played a major role in the probe.

"In two or three days, he got information that might have taken us six or eight weeks to get," Steiner said. "He obviously didn't hold anything back."

Principal suspect

The combined efforts of investigators eventually led to one of the company's drivers who was found not to have delivered all the gasoline on his route the day of the pollution. He became the principal suspect in the case. Investigators determined that the driver had acted entirely on his own and that the company could not be held liable. "We felt the company was in no way responsible, so we left it out of the prosecution," Steiner said.



WCOs and DER investigators worked all night collecting water samples from various sites and gathering other evidence.



Investigators believed they had a thorough case against the driver. Among other things, they had a witness who had seen a company vehicle and the driver at the edge of the creek at about 8 p.m. when the dumping was thought to have occurred. They found where a truck had been driven to the edge of the creek behind the oil company terminal and where the driver apparently had emptied the fuel into the water. They later looked over part of a fleet of gasoline tank trucks at the terminal, finding one vehicle that had several telltale blades of grass and some soil on the hose used to pump fuel. That was an important bit of evidence needed to link the truck to the scene of the dumping.

Of course, they also found gasoline in the stream, and knew the fuel was the cause of a massive fish kill. They had photographic evidence from the scene, and they had witnesses who could testify how the pollutant had sickened them.

Arrest

ECS agents went to the driver's home in neighboring Warren County on October 13—more than two months after the dumping incident—and arrested him on four violations of the state Solid Waste Management Act plus a criminal charge of risking a catastrophe.

Violations of the solid waste act included the disposal of hazardous waste without a permit, the most severe of the four violations, with a maximum penalty of 10 years in jail and a \$100,000 fine, and unauthorized use of another's land as a disposal area.

The charge of risking a catastrophe stemmed from the defendant's alleged disregard for the health and safety of individuals living and working in the area surrounding Cherry Run. The dumping not only sickened several persons, but it could have caused a fire or explosion, authorities said.

Arraignment

Authorities transported the defendant about 50 miles from his home in Warren to Pleasantville in Venango County, where he was arraigned before District Justice Mary Nosko. Arraignment is a proceeding in which the justice reads the charges against the defendant and sets bond, which is intended to guarantee the person's appearance for further court dates. The defendant initially was jailed when he was unable to post \$15,000 bond, but he later posted bond and was freed.

Two weeks later, the defendant appeared again before District Justice Nosko for a preliminary hearing. In this proceeding, the prosecution presents a portion of its evidence against the defendant and the justice rules whether the evidence is sufficient to hold the individual for a trial in county court. The truck

driver waived his right to the hearing, which defendants often do, and agreed to allow the case to proceed in Venango County Criminal Court.

Trial

When the case went before Venango County Judge H. William White on December 15, the defendant testified that he had only recently gone to work as a driver for the oil company. He was unaware that any gas remained in the tank truck when he returned to his terminal on August 8, but then discovered that he had inadvertently failed to deliver about 200–300 gallons to customers on his route, he told Judge White.

The driver should have reported his error to company officials at that point, but instead he tried to cover his mistake by unloading the leftover fuel into the creek. He admitted to the judge that the discharge took only a few minutes.

The defendant pleaded guilty to charges of intentionally dumping gasoline and risking a catastrophe. According to terms of a plea bargain, the other three counts against him were dismissed.

Sentencing

It is ironic that something done so swiftly as this dumping will have such long-term consequences. On January 23, 1989, Judge White sentenced the defendant to serve 11½ to 23 months in Venango County Jail, and to serve a five-year probation after his jail term is completed. The judge also ordered the defendant to pay a \$7,700 fine plus court costs, to pay \$7,479 to the Fish Commission as compensation for the massive fish kill, and to perform 50 hours of community service at Oil Creek State Park in Venango County.

All for a crime which took only minutes.

The Cherry Run case underscores how the Fish Commission works with other agencies to investigate and prosecute polluters.

"We get excellent cooperation from the state police, and we work well with DER in these cases, too," Steiner said, also commending ECS for its role in the Cherry Run probe. The oil company also deserves credit for conducting an internal investigation of the dumping, and for cleaning up fish that were killed by the pollution, he added.

Whether the dumping will have any lasting impact on Cherry Run remains to be seen. If the flow of a stream quickly carries away all of a pollutant, as is hoped in the Cherry Run case, the waterway begins to recover almost immediately, Arway said. Fish, insects and other species in a stream move or are carried by downstream drift into pollution-damaged sections, and will remain there when the habitat has recovered enough, he explained.

But as a rule, complete recovery is a process that is not going to happen over a few weeks or months, say Arway and Ray Hassey, water pollution biologist at the DER regional office in Meadville. "It takes a minimum of one to three years, as a guess," Hassey said.

The rate of recovery depends on factors including the type of pollutant, severity of contamination, presence of any ongoing pollution, and Mother Nature's ability to cleanse a waterway naturally. Streams where water flows more swiftly generally become habitable again faster than do flat, slow-moving waterways.

Hassey said DER plans to reexamine Cherry Run, to determine how well it is recuperating from the damage it suffered.

KING JOHN THE ADAPTABLE

BY MIKE BLEECH

The most complex obstacle facing anglers is adapting to an endless variety of fishing conditions. Learning fishing methods is one thing, but knowing when to put them to use is another matter. This is one of the major factors that separates the most successful anglers from the rest of the pack.

Last September, John Lucas was crowned the 30th "King of Pennsylvania Anglers." What makes his accomplishment stand out from the 29 kings that went before him was that he did it in the most miserable fishing conditions—during Hurricane Hugo!

The lesson Pennsylvania anglers can learn from John's victory is one of adaptability to whatever conditions arise. This is the story of his weekend of fishing during the hurricane, and the lowdown behind the story—his system for adapting to whatever fishing conditions you might face.

The Pennsylvania State Championship Fishing Tournament is held annually on portions of the Allegheny Reservoir, Allegheny River, Conewango Creek, Tionesta Creek, Brokenstraw Creek, and Tionesta Lake, and is headquartered in the town of Tidioute. It is a two-day, catch-and-release event. On the first day, any licensed Pennsylvania angler who registers for the tournament may compete for 15 finalist positions, three each in smallmouth bass, walleye, trout, northern pike, and muskellunge categories. The finalists compete on Sunday, accompanied by judges, for the title "King or Queen of Pennsylvania Anglers," by trying to bring in the greatest total weight in the five categories combined.





Greetings from Hugo

John and I fished together on Saturday, the first day. We decided to concentrate on pike. We figured this would be the easiest category in which to qualify for the finals. But nothing would really be easy that day, because as the tournament began, the remnants of Hurricane Hugo passed through the area.

It rained all day while we fished, varying from a light drizzle to a downpour. The high temperature was in the mid-40s, about 30 degrees colder than the day before. The hard wind, to 40 mph, made it difficult to control our 14-foot aluminum boat. Waves crashed over the transom, making the bilge pump work overtime.

Fishing was slow. We caught some small fish, but the only keeper was a 26-inch pike that John coaxed out of the tangled



limbs of a fallen tree, with a 6-inch live golden shiner. That was one of just two keeper-size pike caught by tournament anglers that day, which put John in the finals.

The weather was more tolerable the next day for the finals, but fishing conditions were actually worse. The barometer had taken a sharp climb. The sky was deep blue with a few high clouds, and it was still cool. The wind had settled down, but it was still breezy. John guessed that the fishing would be tough, and he was right!

Tough decision

John's first tough decision came before he got on the water. He was out of bait minnows. Should he try to do it with artificial lures alone? Or should he wait until a bait shop opened at 7 o'clock, giving his competition more than a few hours head-start? Early morning might be the best fishing of the day. On the other hand, it might take something alive and wiggling to tempt a fish to the hook through most of the day.

John waited for the bait shop to open, figuring that even early morning fishing might not be good under those conditions.

It was nearly 8 o'clock when John finally got on the water. His first plan was





SOMETIMES LIVE BAIT IS THE ONLY THING THAT GETS A FISH'S ATTENTION.

ANGLERS ARE LIMITED BY WHAT THEY WANT TO DO BEFORE THEY GET TO THE WATER. REMEMBER FLEXIBILITY, ADAPTABILITY AND VERSATILITY. TAKE EACH SITUATION AS IT COMES AND MAKE THE BEST OF IT.

to jig vertically for walleye, using a jigging spoon. This produced one three-pound-plus walleye. But when another 20 minutes of vertical jigging yielded nothing, he moved on.

The rest of the tournament hours were spent alternating between crankbaiting along windward shorelines for smallmouth bass, vertical jigging, and dunking live minnows into fallen trees. The vertical jigging was fruitless. Five or six bass fell to the crankbait, but none was the required 12 inches in length. The live minnows, however, produced a northern pike that weighed more than eight pounds, and a keeper bass in the last place he fished. It was that smallmouth that put him over the top!

Waiting for the bait shop to open proved to be a winning decision!

Wait for good conditions

John earned his victory by proving his adaptability. He caught fish under deplorable conditions. We all hope for much better conditions when we go fishing. One point of advice John emphasizes is to fish when conditions are good.

"The worst thing is to go fishing on a schedule," John said. "Then you are fishing a lot of unproductive times. I want to go fishing when I want to go fishing! The weather is right. The barometer is right. If I'm not fishing productive times, I can't do my best."

But like most anglers, he cannot go fishing any time he pleases. So most times he has to deal with whatever conditions prevail when he has the opportunity to fish.

Barometer believer

"I'm a true believer in the barometer," John said.

I asked him what he considered good news from the barometer.

"It's steady," he answered. "There is humidity in the air. I prefer a low barometer, but I don't know that it makes any difference as long as it stays steady for a few days."

John thinks that stability, in general, is one of the keys to good fishing. This includes a stable barometer, stable weather, stable water flows in rivers and streams, and stable water levels in lakes and reservoirs. The stability not only keeps fish in an active mood. It also means that fishing patterns will hold true. Once you find a fishing pattern that produces, the pattern will probably work as long as conditions are stable.

A drastic, fast increase in barometric pressure is the worst sign from the barometer, according to John. "The faster it goes up, the more potent the front, the worse the fishing is," he said. "The worst thing that could happen would be if you had stable weather for a long time and then a front goes through."

Fisherman's luck! Guess what the conditions will be like when *you* go fishing!

Battle plan

As much as he likes to fish under ideal conditions, John still has a battle plan for dealing with the worst conditions. It starts before he hits the water.

"Instead of picking just one lake and just one species, I look at all the waters in my area, and all the species," John explained. "The whole thing is versatility!"

For example, "You could go to a creek or river that had some color to it. For some reason, river fish are more forgiving."

Even the river fish probably would not be aggressive. They would tend to congregate in calmer water, near cover, or in colored areas. Look in the deeper pools, where tributaries bring in colored water, and particularly near deep cover such as logs, which tend to sink into the calmer parts of pools. Boulders or rockpiles that break the current are good in swifter streams. Undercut banks are excellent for bass, trout or catfish.

Deeper water

One of John's basic theories on fishing is that fish tend to move into deeper water at the times when fishing is slow, and that this deeper water location is one of the reasons fishing is slow. Generally, fishing becomes increasingly difficult as the water gets deeper. One advantage of river fishing is that the water is typically less than 20 feet deep.

Even deep lakes can be dealt with, though. "For starters," John said, "I would fish known areas where people catch fish. But I would fish deeper."

When big fish are not aggressively feeding in shallow water, John thinks that fish align somewhat by size in a vertical fashion. That is, the bigger fish tend to be deeper than smaller fish. As a result, the small fish act as a sort of barrier. Most anglers, especially on tough fishing days, are quite satisfied to catch a few small fish, and they stop looking.

"It's hard to go deeper when you are catching some small fish," John said, "but you have to if you want to catch bigger fish. That is one of the hardest things to do, to leave an area to look for bigger fish when you are doing well."

That different area might be just a few feet away, though, in steep lakes like Kinzua and Raystown. It might be a move from the top edge of a sunken creek channel to a sunken log at the bottom of a bend in that same channel at lakes such as Arthur or Shenango.

One obstacle standing between some anglers and deep-water fishing success is that they do not use deep-water methods.

"As fish go deeper, I think their metabolism slows," John said, "so you have to match it with your lure or bait. I go vertical."

John's standard artificial lure presentation for deep-water walleye and bass is vertical jigging with heavy spoons, such as a Hopkins Shorty or Swedish Pimple. This method allows maximum lure control. (Lure control includes location, both vertical and horizontal, action, sensitivity, and hook-setting efficiency.)

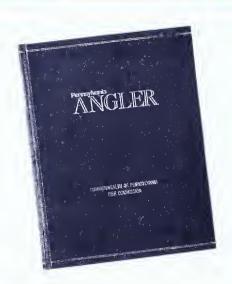
Sometimes live bait is the only thing that gets a fish's attention. This is particularly significant when the fish are so sluggish that they examine your offerings for a while before grabbing them. In such cases, artificial lures are seldom effective.

"Anglers are limited by what they want to do before they get to the water," John said.

John's advice is flexibility, adaptability, and versatility. Take each situation as it comes, and make the best of it.

PA

ANGLERS CURRENTS



Angler, Boat PA Volumes Available

A limited number of bound copies of *Pennsylvania Angler* Volume 58 (January 1989 through December 1989) and *Boat Pennsylvania* volumes 5 and 6 (Winter 1988 through Fall 1989) are available. The

Angler volume contains 1989's 12 issues. It is hardbound in black with gold-colored inscription. The bound Boat PA book includes 1988 and 1989's eight issues. It is hardbound in blue with gold-colored inscription.

These volumes are available on a first-come, first-served basis. The *Angler* volume is available for \$22 postpaid for current *Angler* subscribers and \$31 postpaid for non-subscribers. The *Boat PA* volume is available for \$22 postpaid for current *Boat PA* subscribers and \$28 postpaid for non-subscribers.

When you place an order, please specify which volume you want. If you are a subscriber, please include your account number with your order. This number appears directly above your name on the magazine mailing label.

Payment must accompany orders. Make checks payable to *Pennsylvania Fish Commission*) and send orders to: Circulation, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Conservation Leadership Schools

Penn State University and the Pennsylvania Department of Education are pleased to offer the 1990 Conservation Leadership Schools, resident environmental/conservation education programs for high school students ages 15 to 18. The curriculum, taught in the field, includes activities in water quality assessment, forestry, wildlife management, innovative energy production, recycling, leadership, land use planning, waste management and more.

Space is limited and applications are accepted on a first-come, first-served basis. Early registration is advisable. For additional information and applications, write or call: Tammy Crissman, Penn State Continuing Education, Wagner Building, University Park, PA 16801. Phone: (814) 865-3443.

Zebra Mussels Threaten Lake Erie

A new species that threatens the Great Lakes has arrived apparently in oceangoing ships' ballast water.

"The zebra mussel, a serious pest in Europe, is rapidly infesting lakes in North America," said Joseph Leach, an Ontario Ministry of Natural Resources scientist.

The mussel clogs intake pipes serving water treatment plants, power plants and industries. "It took only three years for mussels to clog a two-foot pipe in Europe," Leach said.

The clam-like mussels are now found in Ontario's Lake St. Clair, the Detroit River and Lake Erie. The mussels probably arrived in 1986, but were not discovered until 1988, he said.

By August 1989, some Ontario water treatment plants had reported a 20 percent reduction in flow because of the mussel. A factory in Ontario will require millions of dollars in repairs because its pipes are clogged with zebra mussels.

The mussels are very fertile, producing about 40,000 eggs per year. Larvae are spread by currents, and are sucked into water intakes where they anchor with thread-like growths. If they are not re-

moved, they grow to maturity in the pipes and build up on one another.

The key to control is to prevent the larvae from settling, Leach said. Someday, new kinds of paint may repel the mussels, but in the meantime, they can be kept out of pipes by high pressure water flow or by using sand filters. After the mussels have settled, scraping or chlorination are required to remove them.

"The solutions are difficult and expensive," Leach said. "We are looking at a major economic problem." City officials in Cleveland predict that fighting the zebra mussel will cost \$50 million. Windsor, Ontario, has already spent \$1 million dealing with the mussel, and the problems are just beginning, he said.

The mussels also attach to boat hulls and colonize spawning reefs. Mussels in Lake Erie have encrusted important walleye spawning reefs, Leach said. Biologists fear that the mussels may affect the survival of walleye eggs.

The mussels are easily transported upstream by boats, or to inland lakes by wildlife, Leach said. Lake Superior is colder and has less calcium than the other Great Lakes, so it may escape a heavy infestation of zebra mussels. "We suspect the other Great Lakes will be contaminated, particularly in inshore areas and embayments," Leach said. "If zebra mussels get into Lake Michigan and the Mis-

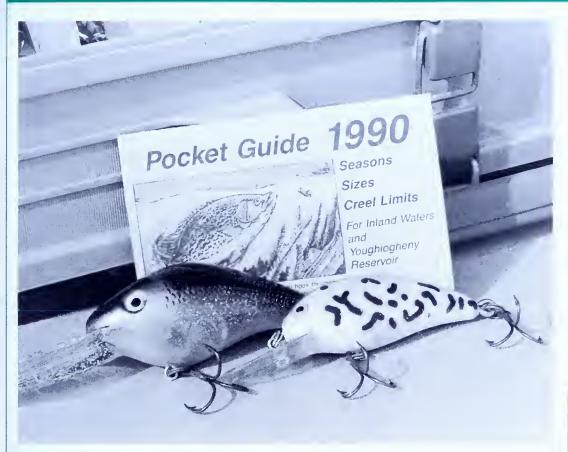
sissippi River system, most places will probably be contaminated with them in time."

Because of increasing concern over ballast water exotic, the U.S. and Canadian Coast Guards established voluntary guidelines in May 1989. Ships entering the Great Lakes are now asked to exchange their ballast water in the open ocean or the Gulf of St. Lawrence, said Margaret Dochoda, a biologist with the Great Lakes Fishery Commission.

This precaution should reduce the likelihood of more new species entering the Great Lakes, she said. Unfortunately, ballast water exchanges on lake-to-lake trips could take exotic already in the Great Lakes and spread them from one lake to another. Although the Great Lakes apparently received the three most recent ballast water exotics during the last six years, the number of ships releasing ballast water has probably not increased, Dochoda said. Instead, species introduced earlier didn't cause problems. These include Chinese mitten crabs in Lake Erie, and flounder in Lake Erie and Lake Superior, near Thunder Bay.

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ANGLERS CURRENTS



The Commission's 1990 Pocket Guide shows seasons, sizes and creel limits for inland waters and Youghiogheny Reservoir. It's a handy, concise reference to carry astream, keep in your tackle box, and stash in your boat. Single copies are free, but with requests include a stamped, self-addressed envelope. Contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Commission Welcomes New Staffer Kimberly Mumper



Kimberly Mumper is the new Aquatic Resource Education Program Specialist in the Bureau of Education and Information. Her prime responsibilities are coordinating the activities of the Keystone Aquatic Resource Education (KARE) Pro-



gram, holding facilitator training workshops, developing new educational materials, and working with the program's 36 facilitators, who conduct statewide teacher workshops.

Kim has held positions in environmental education and public information with the National Park Service and the International Joint Commission, and she has taught junior and senior high school science and biology. She earned a bachelor's degree in biological sciences from Michigan Technological University and a master's degree in environmental education from The Ohio State University.

Rights of Way

Safety is a two-way street. Sharing the water with other boaters would be chaotic if it weren't for rules. There aren't visible lines dividing the waterways into traffic lanes, but boaters operating in crowded lakes and harbors stay on their side of the "road" to avoid collisions.

The principle all boat operators must follow is this: Only one boat has the right of way. This boat is termed "stand-on vessel," and is expected to proceed without changing course or altering speed. A boat not having the right of way, the "give-way vessel," must yield to the stand-on vessel. This is a simple rule, as these basic situations show.

- Crossing. Crossing occurs when two boats approach at an angle. If another boat approaches from the right (starboard) side, that boat is privileged and has the right of way. That boat holds its course and speed. The "give-way vessel" yields by slowing down or stopping and passing behind the other boat.
- Overtaking. When a boat overtakes another boat from the stern, the overtaking boat should keep out of the way of the vessel being overtaken. The overtaken vessel holds a steady course and speed.
- Meeting. When two boats meet each other, on reciprocal or nearly reciprocal courses, neither has the right of way. Both are required to alter their courses to the right (starboard) so that they pass port to port.
- General prudential rule. When a boater has attempted the steps outlined above and an accident still seems inevitable, then do whatever is necessary to avoid a collision.
- Special circumstances. Boats propelled by oars or paddles have the right of way over motorboats. The same applies with sailboats. However, when a sailboat overtakes a motorboat, the motorboat is privileged and has the right of way.

This explanation is a capsulated view. For a complete accounting of the navigation rules, see *Navigation Rules, International—Inland*, available from the U.S. Government Printing Office, Superintendent of Documents, Washington, DC 20402.

You will find another useful interpretation of the rules in *Chapman's Piloting*, *Seamanship and Small Boat Handling*, published by Hearst Marine Books.

In addition, see page 14 of the Summary of Boating Regulations 1990.

ANGLERS CURRENTS

New Access Guide

The Chesapeake Bay and Susquehanna River Public Access Guide is a must for those who explore the river and bay. The 72-page guide was produced cooperatively by Pennsylvania, Virginia, Maryland and the District of Columbia. It contains the

most up-to-date information on public access sites in the Chesapeake Bay, its tidal tributaries and the Susquehanna River.

Colorful maps display information on over 650 public access points. Facilities at each site are listed for boating, swimming, hiking, camping, fishing, picnicking, nature study and more.

The coverage area is divided into colorcoded sections, which makes finding areas and sites easy. The sections are the Susquehanna River, upper Chesapeake Bay, and lower Chesapeake Bay.

The new guide is available for \$5, including shipping and handling, from: Pennsylvania Fish Commission, Publications Section, P.O. Box 1673, Harrisburg, PA 17105-1673. Please make your check or money order payable to Pennsylvania Fish Commission.

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating oppor-

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NGLERS OTEBOOK by C. Boyd Pfeiffer

For night fishing, paint the last six inches of the rod with white or phosphorescent (glow-in-the-dark) paint. It allows you to see the end of the rod easily and is especially good for detecting strikes when baitfishing.

Those tiny rubber bands used to hold dental braces are also ideal to hold crickets, crayfish, grasshoppers and similar live bait onto a hook. They keep the bait far more livelier than hooking. Use one rubber band for small baits, two on a longer shank hook for larger baits.

Craft and hobby shops are ideal shopping spots for fly tying and lure making. They carry artificial fur, several types of plastic eyes, tinsel, glitter, paints, beads and similar materials that can be used for making flies and lures.

If you use more than one tackle box, label each according to the waterway fished or the contents. This makes it easy to pick the right box and avoid mix-ups when packing for a fishing trip. Label the boxes with dark permanent felt-tip markers.

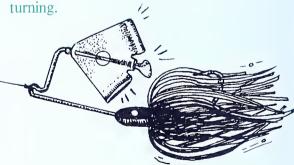
To dull bright braided, steel or nylon coated steel leaders, use a permanent darkcolor felt-tip marker. Be sure to roll the leader around to cover all sides and coat the swivel and snap of the leader, too. It will wear off in time, but is easy to restore.

Don't store different color worms together in one compartment of a tackle box or one plastic bag. The dark ones will discolor the lighter colored worms because the color will bleed between worms.

Fish close to the boat will often try to run under the craft to the other side. In these situations, stick the rod straight down and work the rod around the nearest end of the boat to fight the fish on the other side. The purpose is to prevent any line/boat contact because this will usually cut the line.

For accurate casting, allow more than your usual length of line to hang down from the rod tip with a light lure, less than usual with a heavy lure. The adjustment of line allows "loading" the rod appropriately to the rod power.

For added buzzbait noise and more fish in the livewell, adjust the lure so that the turning blade just barely clicks against the lower wire shaft, but not enough to stop the blade from



Never make snap or quick back/forward casts when fishing with bait. This sudden change of direction throws the bait off the hook.

Always discard fishing line in a bag placed in a trash can or proper receptacle. Line left along the stream, lake or shore can tangle and kill small birds and animals. In the water, it can catch turtles and birds and cause expensive damage to outboard lower unit and prop seals.

ıllustratıon — Rose Boegli

On The Water

with Dave Wolf

"The Parade"



There is a parade in town today, led by a white truck humming and spewing foaming water. Those who line up behind the leader are here to watch for the payload that the white trucks hold. They come with nets and rods jutting from peculiar places. They come in hopes of taking home a count of eight scarlet, gold or tarnished copper-looking fish.

The parade must have begun with the invention of the hatchery truck, and those who fell in line were in great number. A few years back the Commission had to limit the parade's participants. They proclaimed they would no longer let anyone know the day of stocking, rather only the week, except for those folks who helped the local waterways conservation officer stock the trout. The help is much needed and welcomed, but there are no secrets in the world anymore, and once again the parade is growing in number, and there is an outcry by those not invited.

It seems that nearly everyone wants to know the exact time and location that the fish are stocked. Each year the secretaries in the Harrisburg office where I work are offered free meals and other gifts in exchange for the day of stocking schedule. They decline, of course, and no such list can be found in the Bureau of Education and Information anyway. Most of us working for the Commission have no idea what day streams or lakes are stocked, and most of us don't care.

The parade is a bother. When announced by the day, traffic and landowner problems arose. When weeks only were announced, waterways conservation officers found themselves short of help. Now, leaks in the week-of system continue to occur and tracking down the culprits is tough and a waste of



valuable time. The Commission finds itself in the unenviable position of trying to decide whether or not to announce day of stocking where put-and-take fisheries exist on public property. In many cases, the Commission would like to see a higher return to the creel of stocked trout.

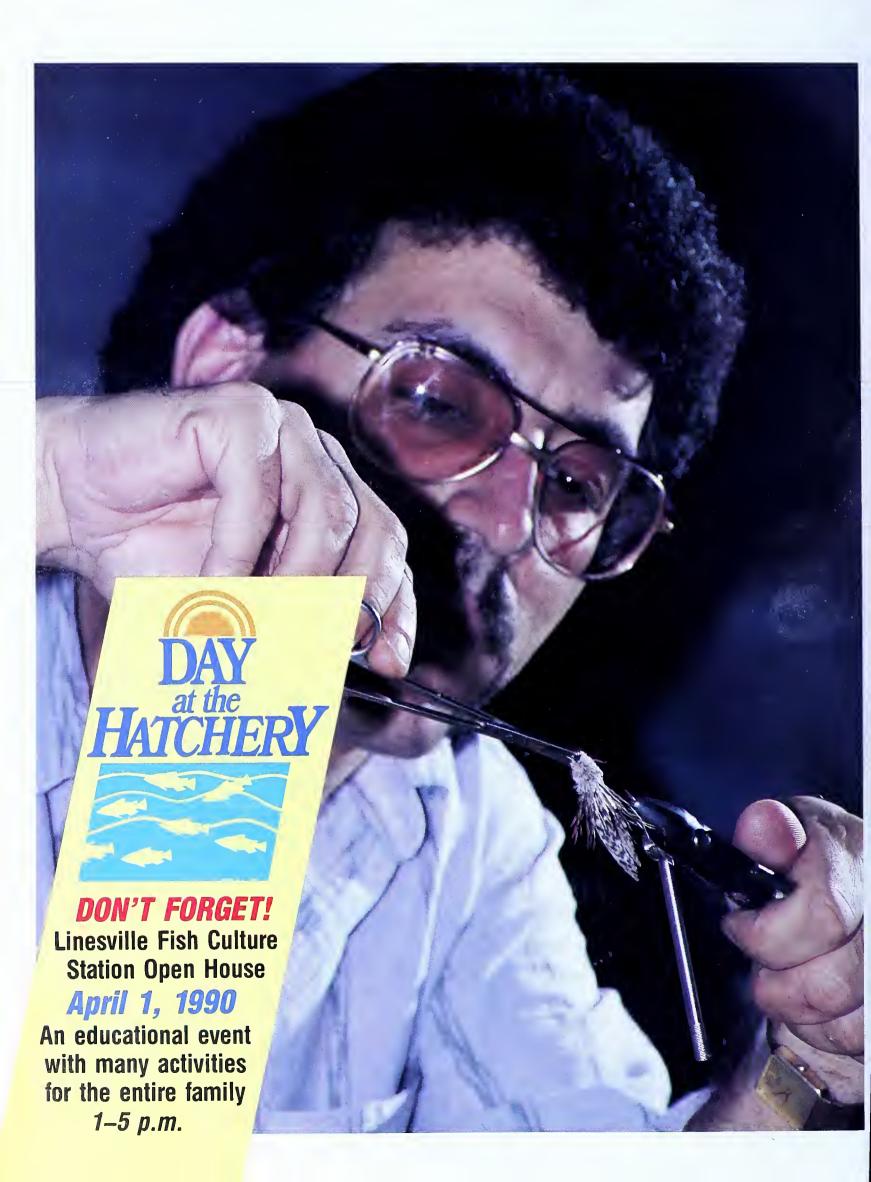
I do not like the parades. It groups large numbers of anglers at stocking points, often creating landowner and traffic problems. It also means that those who find out about the parade, or those who do not have to work during the week, when most stockings occur, get the first chance at the merchandise. It is almost akin to being the first person at a yard sale. Get there first and the chance of finding the choice offering is good.

There is a growing number of folks who think that fishing over freshly stocked pods of trout is not all that sporting. They complain that it diminishes the sport. Some hard-liners think that it reduces the whole affair to less than a sport.

The problem is that parades are popular, and they attract attention and may even sell fishing licenses. For me, shoulder-to-shoulder fishing is not my cup of tea, although I admit to doing it on occasion. But to many it is fishing at its best.

What is the solution to the parade? Should it continue as it is, despite the flaws? Should it become a daily celebration from mid-April until the end of May? Fortunately, there are as many opinions in the world as there are people, and I would like to know what you think of the parade. It could be that I am nothing more than an old stick in the mud.

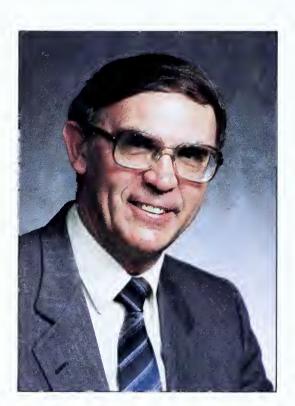
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Pennsylvania ANGIER The Keystone State's Official Fishing Magazine

Straight Talk

Earth Day 1990



Edward R. Miller, P.E.

Executive Director
Pennsylvania Fish Commission

Earth Day will be observed on April 22. This will be the first worldwide observance in 20 years, and that date is greatly significant to conservationists across Pennsylvania and the entire nation. Activities are being planned on national, state and local levels, with emphasis on individual action to reduce serious global environmental problems.

Governor Robert P. Casey will proclaim April 22 to 28 as Earth Week, and he will participate in numerous events throughout the month.

There have been many changes in public attitude since the first Earth Day in 1970. National pollsters now report that a majority of respondents (for the first time) are listing environmental protection as one of their major concerns. This agency has witnessed tremendous growth in public interest in its aquatic resource protection and fishing and boating recreation programs. Fishing and boating depend on high-quality waters and necessary support facilities and services for their existence.

Our aquatic resources depend on solutions to the many issues now facing our entire earth. The issues include acid precipitation, toxic wastes, ozone layer destruction, solid waste disposal, sound forest and land use practices, domestic and industrial waste treatment, and a myriad of other closely interconnected environmental issues.

Although public awareness has grown tremendously during the past 20 years, and although it is apparent that action is urgently needed, there is a sense of despair among many because it is not clear what that action should be. Many individuals conclude that they cannot do much and thus choose to do nothing at all. Earth Day 1990 is rooted in the belief that people, both individually and collectively, do count, and by working together they can accomplish extraordinary things. One of the Earth Day themes is "Think Globally, Act Locally."

April 22 will have an even greater meaning for me as a conservationist and director of one of the nation's most active resource management agencies. Not only is it my birthday, but it is also the day my family has selected for the christening of my first grandson. My mind will be filled with thoughts of what lies ahead for this young lad in the face of the awesome threats facing our world.

Will he have clean air and clean water to sustain his life? Will he be safe from health problems resulting from improper waste disposal practices? Will he be able to fish and boat safely on our nation's waterways? Will he be able to eat fish, wildlife and other foods without fear of contamination? Will he live long enough to witness a change in human nature, from shortsightedness and greed to the genuine concern and commitment needed to solve these problems?

Answers to these questions are not easy to find, but they *must* be found if our children and grandchildren are to enjoy full and rewarding lives. Earth Day 1990 can serve as a springboard to get responsive political action for essential conservation and environmental efforts and to motivate all of us to take responsibility for the part we play. I urge you to play an active role on Earth Day—and every day.

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Shad from Shore by Dennis Scholl Shad fishing from shore is popular and productive. Come close and let the author whisper to you the secrets of success
The Flies of April by Jim Bashline Using these dry flies, nymphs, streamers and wet flies in a variety of heads-up ways can help you score
Natural Bait: Best Bet for Opening Day? by Nick Sisley Use these basic ideas to fish worms, minnows, corn, cheese and salmon eggs
Enjoy the Wild Trout Experience by Don Douple Take the author's advice. After you've fished for wild trout for a long time, you learn how, where and when to catch them
No-Till Farming and Water Quality in Pennsylvania by Joel Myers and Barry Isaacs This farming method can have far-reaching conservation effects
April Trout in the Endless Mountains by Bill Feddock Northeast Pennsylvania's secret places can provide fine, uncrowded trout fishing
Becoming a New Boat Owner by Art Michaels When you own your first boat, you enter a new world of fun and fishing adventure, but you need these special skills to ensure your safety 26
KIDS PAGE! by Steve Ulsh Heeding this lesson can save your life
On the Water with Dave Wolf "The Brook"

The cover

Let the stunning fishing scene on this issue's front and back covers inspire you to create your own stunning fishing scene this season and on opening day. *Angler* contributor Tom Prusaczyk took the picture at Lake Erie. If you're a trout fisherman, check out the baitfishing brush-up on page 12 and review the fly fishing wisdom offered in the article on page 8. If a wild trout experience on opening day lures you, turn to page 14. Don't miss the story on page 4 if you're a shad fisherman, and if you're a boat owner, especially a first-time boat owner, see page 26 for vital, practical information.

Shad from Shore

by Dennis Scholl

ading waist-deep into a river that's chilled by spring runoff is a numbing experience, an act that some say requires more lunacy than bravery. But then, no one has ever accused shad fishermen of being a sane lot. Sanity is not departing a warm bed at 4 a.m. just to step into a dark, icy river with no promise other than to frost your toes and freeze your fingers.

But that's the way a good shad fisherman—a good *shore* fisherman—approaches his sport. No matter what the conditions, or the time of day, he'll be there if he thinks the shad are there.

Angelo Christopher has been numbing his feet in the cold currents of the Delaware since 1958, when he unintentionally caught his first shad one April afternoon after experiencing a humbling snubbing on a New Jersey trout stream. Thirty-two years old at the time, Christopher was crossing back into Pennsylvania when his fishing companion, Charlie Breidinger, looked down at the Delaware and suggested that the pair toss their last casts of the day into the swift, broad river.

"We were just fishing for anything," Christopher recalls. "Charlie put on a CP Swing and caught a 12-inch trout. Pretty soon I got hold of something, too. Charlie said I had a bass."

Christopher wasn't so sure. Whatever was pulling his line tugged considerably harder than any bass he had ever hooked. But the mystery fish wouldn't reveal itself. Christopher was totally stumped. Finally the fish broke water.

"It looked like a salmon," Christopher remembers. "But we didn't know what it was. I landed it and hid it in the trunk under the spare tire. We went to Bushkill Bait in Easton and asked the owner what it was. He laughed, slammed it down on the counter, and said, 'That's a shad.'

Coincidentally, the bait shop's shelves included a box of brightly painted lead lures called shad darts. Christopher and Breidinger each bought \$10 worth and were off to the Delaware the next day for another joust with these strange fish that looked and acted like miniature tarpon. Their money wasn't wasted.

"It was great; we never had anything like it," Christopher says. "But we didn't want anyone to know. People would stop at the bank and look down, and if we had a shad on, we'd cut our lines. We didn't want them to see what we had."

30 years ago

Such was shad fishing three decades ago. After nearly disappearing because of pollution in the lower river, the shad staged a dramatic revival. Hundreds of thousands of them ascended the Delaware to reach ancestral spawning grounds above the Delaware Water Gap. Amazingly, the only people aware of the migration were anglers like Christopher and Breidinger who stumbled on the streamlined, silvery fish while trying to entice something else. Even more amazing is that these fishermen were able to keep their secret under wraps for several years! Local newspapers didn't tap the grapevine until about 1961, and even then fishing pressure remained light. By 1963, though, people began to catch on, literally. As Christopher says, "The word was out."

In those days, the common way to fish for shad was from the shoreline. There were a few boats on the Delaware, but it was much easier just to pull on a pair of hip boots or waders and shimmy down a dirt path to the river's edge. If you were lucky enough to get a spot next to someone who knew how to catch shad, you'd learn something. If not, your education came by trial and error.

Today, an estimated 65,000 anglers test the Delaware for shad each spring. Many of them fish from boats, but shore fishing remains popular and productive. It requires dedication and perseverance, and there's no denying it's work, but shore fishing is effective, just as it was 30 years ago when Angelo Christopher, Charlie Breidinger and a handful of others discovered it quite by accident.

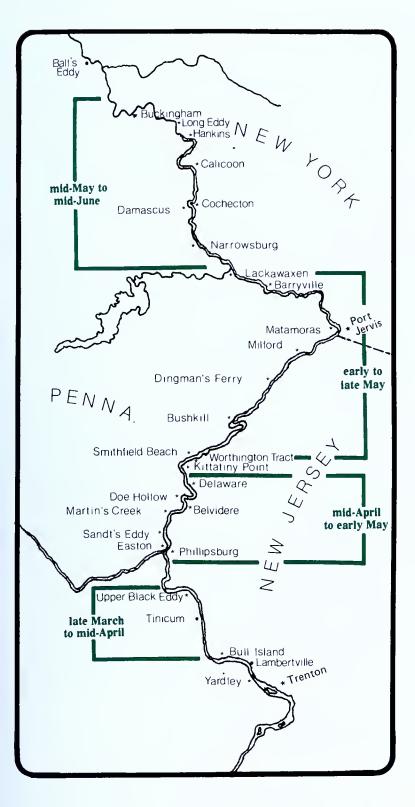
Starting out

Perhaps the most appealing aspect of shore fishing is its simplicity. All you need is a rod, a reel, fresh monofilament, a variety of splitshot, an ample supply of shad darts or spinners, and a knife or clippers—of course, that's if you're not planning to wade (which you really don't have to do) and don't care whether you land your fish.

If you do plan to wade and would like to eat your catch, add to your bare-bones outfit a wading staff, a pair of hip boots or waders, and a long-handled, wide-hooped net. Any more than that is excess baggage.

That's the beauty of shore fishing. You get up in the morning, carry your gear to the car in one trip and take off to the river. There's no boat to hook to your car, no oil and gas to mix, no drainage plugs to forget and no waiting behind 10 other boats to launch. What's best, you don't have a considerable outlay of money for a vessel that might not even improve your shad fishing.

But as good as it may sound, don't expect to catch a shad on every cast once you ease yourself into the river. There are tricks to learn and techniques to master. The first rule of thumb is to observe people who are catching shad. Analyze their casting technique. Watch how they handle the rod and reel as they work



If you're unfamiliar with the river, your best bet is to locate concentrations of cars and add yours to the collection. You're likely to have stumbled on a hotspot. Starred locations (above) feature shore access.

their lures. And ask questions. Some anglers will ignore you, but most will share at least the basics.

Angelo Christopher knew very little about shad in 1958, but he did know that they traveled on the edge of the current in fast water. That single bit of information was enough to lead him to good fishing up and down the river.

"We knew they hit alongside the riffles; we knew they were channel travelers," Christopher says. "So we always looked for where the channel came close to the Pennsylvania shoreline."

That simple approach resulted in marvelous fishing from Bucks to Pike County. By his third season Christopher was confident that he could catch shad anywhere, but he never closed his mind to new ideas.

"We always watched others," he says. "It was another trick we put in our bag. To this day we still learn things from even the inexperienced fisherman."

Fast water isn't the only place you'll find shad. They swim every inch of the river, so in theory every inch should be a potential hotspot. Slow-moving pools, such as the pools at Riverton and Portland in Northampton County and Lackawaxen in Pike County, offer superb fishing no matter what the river level happens to be.

But these spots are good for Pennsylvanians only because the channel closely parallels the Pennsylvania shoreline. When it follows the New Jersey or New York shoreline, anglers on that side of the river benefit.

By the way, a reciprocal license agreement between New York and Pennsylvania allows shore fishermen from those states to fish the opposite shoreline without purchasing an out-of-state license. New Jersey does not have a reciprocal agreement with Pennsylvania.

If you're unfamiliar with the river, your best bet is to locate concentrations of cars and add yours to the collection. You're likely to have stumbled on a hotspot. But do more than approach it at face value. Analyze the water. Watch where the fish are being caught, and place it in your memory banks. Then discover your own hotspot by looking for similar situations elsewhere.

Another way to locate good fishing is to scout the river in summer or fall when it's low. The channel is usually easy to discern, as are dart-eating sandbars and rockpiles. Write your observations and sketch the area or take photographs. This information will be invaluable the following shad season.

Remember—nature has gouged a channel that shad follow from year to year. Find it and half the battle is won. Learn to fish it properly and you'll experience the excitement this ocean migrant creates each spring.

Technique

Casting for shad is a lot like fishing bait for trout. You cast either straight out or at a slight upstream or downstream angle and allow the lure to drift with the current. The idea is to keep your line taut so you can feel the drag of the current on your lure.

The standard procedure is to cast the dart and let it swing downstream, following its path with your rod tip. When the dart reaches the end of its arc, allow it to hang in the current momentarily. Shad often strike while the dart is in this "hold" position. If nothing happens, retrieve the dart at a pace just fast

enough to keep it from getting hung up on underwater brush or rocks. Shad do hit on the retrieve, so don't be in a hurry.

You can improve your chances of hooking a shad by imparting a twitching, jigging action to the lure while it's drifting downstream. A shad dart that "jumps" in the water is more appealing than one that drifts along listlessly. Some fishermen jig incessantly while others twitch their rod tips every two or three seconds.

More important than jigging the dart, however, is getting it down to the proper depth. Shad are deep swimmers and it's often necessary to pinch one or more splitshot (No. 4 or smaller) onto your line to get the dart to the fish. If you're not bumping the bottom from time to time (and not hooking fish), your dart probably isn't getting deep enough.

As a rule, shore fishermen attach splitshot about one foot up from the dart, which is tied directly to the line. If the water is high, move the splitshot down to three or four inches from the dart. If the water is low, don't use splitshot at all. The weight of the dart will suffice.

Spooling your reel with six- or four-pound monofilament will help your dart sink faster, because a lighter, smaller-diameter line cuts through the water faster than eight- or 10-pound test. Veteran shad fishermen never use line heavier than six-pound. Some anglers even use two-pound line with 10- or 11-foot "noodle" rods. With this setup, the rod absorbs the pressure, not the line.

If you're fishing fast water and don't think your dart is getting down enough (if it is, you'll feel it bumping rocks), try backreeling line off your reel a few turns at a time. But backreel only if you're sure your dart isn't getting to the proper depth. Excessive backreeling results in hangups and lost darts, which, as you'll find out, happen soon enough no matter which method you use.

When you hook a shad in fast water, try walking downstream to a calmer section to land it. This requires the cooperation of the anglers below you, but it's an accepted procedure and no one should be shocked when you request to pass by. Battling a shad in fast water is tough and also restricts the fishing time of anglers around you.

If you're fishing a pool, it's necessary to keep the dart moving, or face the prospect of getting hung up on every cast. After you cast, pull your rod tip up straight, jigging it as you pull. Then lower your rod and let the dart settle, reeling up the slack as it descends. Repeat this procedure until your cast is over.

If you're not catching shad in one spot, move around. Walking five or 10 yards in either direction may make a big difference. But when you locate a productive spot, stay there and remember it for your next trip. Charlie Breidinger marked his favorite spot with a painted X, and he caught shad there for more than 20 years.

Also, don't be discouraged if the river is swollen and turbid from rain. High water tends to bring the shad closer to shore. Sometimes you can reach them with a cast of less than 10 yards. Ideally, you should locate places that produce in low, normal and high water conditions. Then you know you always have an ace in the hole when you need it.

Gearing up

The shad is called "the poor man's salmon" for good reason: A fisherman of even the most modest means should have enough money to equip himself to catch one.

All that's needed is a rod of $6^{1/2}$ to $7^{1/2}$ feet in length, a reel

that holds 200 yards of six-pound line, and at least two dozen darts—for one trip. Of these components, the line is the most important with the reel placing a close second. Always buy the best line you can afford, and purchase a reel with a respected drag system. Shad are tackle-busters and will tear up a cheap reel in no time. I've been using a Lewes Speed Spin (ultralight model) for years and never have had a problem. I also have an old Zebco Cardinal 4 that's never failed. But a medium-priced reel made by Shimano or Penn or any other well-known manufacturer should do. Multiple-disc drag systems are the best.

A rod of 6½ to 7½ feet is necessary because of the long casts that often are needed to reach the channel. Ultralight rods of 5 to 6 feet will do, but they don't offer the casting potential of a longer rod. Keeping the spool of the reel filled at all times improves casting, too. Blank material is a personal choice. Fiberglass, graphite or a hybrid all work. Angelo Christopher used a 6½-foot Eagle Claw Featherlight in 1958 and still swears by it. But there are others who only use graphite, claiming it offers better castability and sensitivity.

A shad dart is the easiest lure to cast, but not the only offering that works. I caught my first shad on a silver-bladed Swiss Swing in 1962. We didn't have splitshot, so we cut lead toothpaste tubes into skinny strips and wound them around the line. Talk about primitive!

I don't use spinners today, although some shore fishermen do. I'm sold on darts and carry a variety of sizes and colors. Most shore fishermen cast a quick-sinking ¹/4-ounce dart, but there are others who prefer smaller darts of ¹/6th- or ¹/8th-ounce, adding splitshot if necessary. Darts smaller than ¹/8th-ounce are difficult to cast even with splitshot.

Fluorescent colors are popular, but the traditional red-and-white and yellow-and-red combinations are winners, too. Calf tail (kip tail) hair is the traditional tailing material, but there's a movement toward mini-size plastic-action tails in fluorescent green and yellow. If you make your own darts, slipping on plastic tails saves an immeasurable amount of time. Whatever type of dart you use, take at least 25 or 30 on every trip. You will lose darts; everybody does.

Don't attempt to net a shad with a trout net. It won't work. There are two options: A net with a large hoop and short handle that can be stored by shoving it down the back of your waders, or a wide-hooped net with a three- or four-foot handle that can be set on the shoreline.

Before you wade in, get a pair of hip boots or waders. If you plan to fish in late March or April, buy a pair of neoprene chest waders or at least a pair that's insulated. Even then, you'll probably want to don a pair (or two) of long johns and a polypropylene sock liner with a good wool sock over the top. By the middle of May, you can wade in an old pair or sneakers and jeans.

What's left? Perhaps the most important component of all: A wading staff. The Delaware River shoreline is loaded with deep dropoffs. One slip could be your last. Probing the bottom with a staff is safe and smart. A stout stick works (drill a hole in the top and attach a nylon or leather strap), or you can use an old ski pole, broom handle or a lightweight bamboo pole.

Now you're ready to tackle Pennsylvania's best gamefish, a tough son-of-a-gun that can leap, dive and scream downriver with the best of them. But don't become discouraged if you don't have success the first time out. If you give up too soon, you'll never know how great freshwater fishing in the Keystone State can be.





The Flies of April

by Jim Bashline

an the angler who chooses to cast flies find happiness and willing fish on opening day? Will he be forced, after hours of unproductive casting with fur and feathers, to beg from a stranger a dozen worms, salmon eggs or cheese balls to satisfy his need to feel a tug on the end of the leader? (After all, it was a *long* winter.)

These and other questions involving fish and honor are no small thing with fly anglers. Yes, trout can certainly be caught on flies during the month of April and every other month, for that matter. About the only situation that might prevent it would be serious flooding. Some of the best wet fly fishing of the year occurs during April and not a few opening days have seen wonderful dry fly fishing.



For 40 trout seasons now I have not fished for trout with any sort of bait on opening day. Actually, that's remarkable because I'm not anti-baitfishing. I sincerely believe that every fledgling angler should spend an apprenticeship with a baited hook. It's the best way to learn where trout are in any stream.

My best fly fishing days during the month of April have always been the result of old-fashioned downstream wet fly fishing. Downstream wet fly fishing is an ancient and highly effective method of catching trout. The technique was *the only* fly fishing style for 150 years in the United States and Europe. Dry flies, the elongated streamers and today's amazingly life-like nymphs are comparatively recent innovations.

Fifty years ago, if an angler were seen waving his rod back and forth with flies attached, it was a safe bet he or she was using wet flies. They caught fish then and still do. In fact, there is no other type of fly that does it so well when the water is at normal or slightly above normal height in April. Even if no natural insects are seen, a pair or trio of wet flies jiggled and jerked as they complete their downstream drift almost seems to arouse trout from the late winter doldrums.

Trio

The best way to go about this is to tie on three flies of different patterns at approximately 26-inch intervals on the leader. It's easier and more tangle-free to use a leader that's exactly the length of your fly rod. If you tie your own leader, allow one end of a blood knot—at the appropriate spots—to stick out about eight inches. These become "droppers" to which the second and third flies are attached. It's best to form the droppers from the heavier-diameter mono—the monofilament closest to the line.

With three flies thus rigged, begin to cast across-stream and downstream at a 45-degree angle. Cast close at first and gradually increase the distance every half-dozen casts or so until you've covered the water thoroughly. Take four or five short steps and repeat the procedure.

At first, try nothing more than a dead drift. Allow the flies to float along with no motion, keeping slack line at a minimum to feel a soft "tap."

If that doesn't bring a strike, add a little bounce-bounce-bounce to the rod tip. A slow stripping motion is next on the agenda, and then, a fast strip. The idea is to find the "pattern" that works on that particular day.

Mixing retrieve styles until you discover the right combination is the secret to successful downstream wet fly fishing. It is angling fun at its finest to discover which series of jiggles, jerks and odd little wiggles produces the most strikes.

I hope fly fishermen can gain something from these words, but to be honest, the very best way to understand the subtleties of this technique is to watch an old-timer do it. You'll not find it difficult to spot them. They're the graying ones with many patches on their boots, reels worn shiny and casting with mechanical precision. They are also wasting little effort false casting. Their flies are in the water most of the time, doing something.

The great advantage of downstream wet fly fishing is the way a trout strikes the flies. If your fishing tackle is suitable for such angling, about 75 percent of the fish coaxed into striking hook themselves. This happens because the line is reasonably straight, and as the trout grabs the fly and attempts to turn with it, the leader tightens and the hook point penetrates. The rod bends, a splash or swirl is seen and *bam*, you've got him!

Tackle

Some careful readers will have noted that in the last paragraph there was a reference to "suitable" tackle. This is a most important factor in the wet fly game. The old-timers who fished with soft, extremely limber rods hooked more trout because those vintage bamboo rods (and early glass ones) were "self-hookers." They bent easily, and as the trout turned to return to its resting spot, these rods offered little resistance. The angler felt the pull and the fish was on. The slightest twist of the wrist set the hook securely.

Modern graphite rods are mostly designed to false cast a lot, a requirement for dry fly fishing. In short, they're stiffer. They're great for setting the hook when slack line must be picked up, but not so wonderful for downstream wets.

If you own a modern graphite rod, don't despair. There's an easy way to remedy this state of affairs. Buy a fly line that's a size or two heavier than the one recommended by the manufacturer. This automatically "slows" the action because of the extra weight of the line. I've used a 7-weight line on a number of graphite rods geared for 5-weight line when fishing wet flies and they work splendidly.

Where to fish

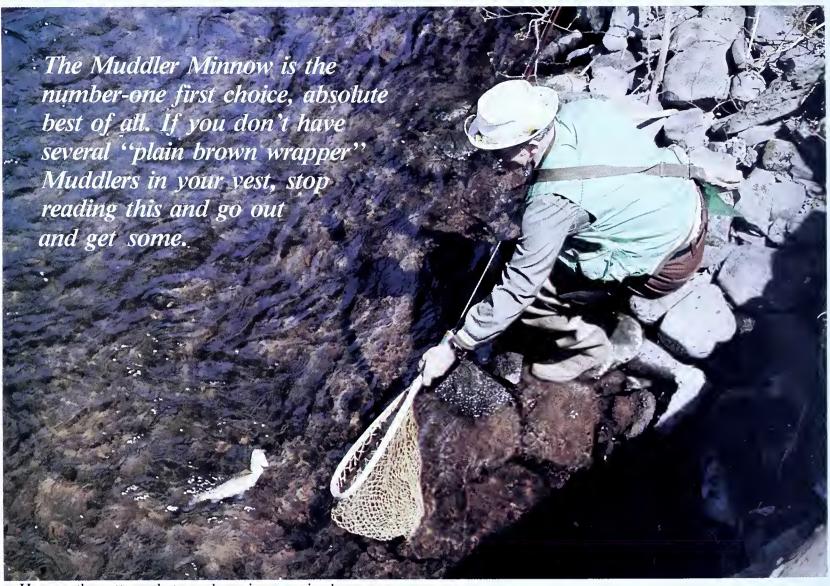
If you find yourself on a hard-fished piece of water (which can happen on opening day), you'll discover that most of the angler activity will be taking place at the deeper pools. Such spots are good places to be if you've got a juicy nightcrawler or salmon egg on the hook, but not ideal for wet flies.

Head for the shallow flows between pools and the bouncy runs that lead into them. Early in the season, trout are generally looking for warmer water and that's where they'll find it. Shallow water is also where the early flies will hatch and where the minnows and other fish food will be. You'll probably find that you have such water to yourself and you'll catch some trout.

Flies

No facet of fly fishing is more intriguing than the fly patterns themselves. Hundreds of books, thousands of magazine articles and conversational hours by the million have been devoted to these fascinating bits of fur, feather and steel. The duplication or suggestion of nearly every aquatic and land-borne creature that trout might find in the water has been copied at one time or another, with varying results. Some anglers carry almost all of them in their fly boxes.

Conversely, some highly skilled anglers confine themselves to one or two patterns and catch just as many fish (frequently more) than the multi-fly fanciers. As with most angling mysteries, the best approach probably lies somewhere between these extremes.



Here are the patterns that are always in my spring box:

- Gold Ribbed Hare's Ear. This somber, brown and gray fly with gold tinsel rib is the finest wet fly pattern ever concocted, bar none. If I were forced to select the single best wet fly for fishing anywhere in the world, this would be it. Sizes 16, 14, 12 and 10.
- Lead Wing Coachman. Almost as good as the Hare's Ear. This traditional wet fly just looks "buggy" in the water, and the iridescent sheen of the peacock herl body is the reason why. Same sizes as the Hare's Ear.
- Hendrickson. There are many blue-gray flies that might be just as good, but you need one with the speckled wood duck wing. I tie mine with a reddish-brown fur body and add just a turn or two of gold rib at the bend of the hook. Same sizes.
- Professor or Grizzly King. These two are lumped together because they're both attractor flies. Both have red tails and metallic ribs. I always place one of these in the center of my three-fly rig as a flashy fly that suggests a tiny baitfish. Either one in sizes 12 and 14.
- Royal Coachman. I know the ubiquitous RC is on a lot of lists and I'm not going to ignore it, either. As a brook and rainbow trout pattern it's still hard to beat for one simple reason. It's easy for trout to spot in fast water and the angler can see it, too. Use it as the "hand" fly, the one closest to your hand, as a kind of beacon, letting you know where your leader is.

Later in the year you'll need some pale cream, tan and yellowish flies, but these half-dozen will seduce 99.9 percent of the catchable trout in April.

The weighted nymph

Using nymphs weighted with wire or lead foil wrapped around the hook shank before tying the fly is one way to fish deep. Another is to attach some splitshot, wraparound or soft (moldable) lead to the leader. Most skilled nymphers add lead because they can alter the amount needed for different pools and runs. This is the most critical decision. To work best, the deep-running nymph has to be deep, bouncing along the bottom in a natural manner. When April water is about the color of weak tea with a little cream in it, the deep-running nymph can be as effective as garden worms.

Cast upstream on a short line. To allow that nymph to drift along as unfettered as possible, keep a tight line all the time. Any pull, jerk or line hesitation is reason enough to strike. Some of the signals will be rocks, limbs and assorted debris, but many of them will be trout. This is a busy way to fish and it requires considerable wading and casting.

Actually, *casting* is not really the proper word. Lofting or swinging the weighted nymph is what you're really doing. Long casts are difficult with a sinker hanging on the leader and they won't produce much, anyway. Too much line between you and the nymph creates a big sag in the line and you'll feel few strikes.

The vast assortment of nymphs listed in fly catalogs and available at tackle shops is astounding. Add to these the local favorites and "special" nymphs created by a small army of fly tiers and the novice angler may easily become bewildered. Forget patterns. Think colors. Acquire some in the basic browns, grays,

olive greens and "dun" shades in forms that suggest mayflies, stone flies and dragonflies.

Many mail order shops feature nymph selections for our part of the country and most of the time they work just fine. Another way if you're not sure is to ask at the local fly shop. They want you as a customer, so you'll be given good advice on patterns.

A curious inconsistency about early season nymphing is that trout frequently take much larger ones than those that better suggest the naturals. Perhaps their perception of size is altered by the colder water of April. At any rate, I like sizes 10 and 12 for this month most of the time. As the water warms, drop to size 14.

Streamers

The major problem with streamer flies is that every angler admires these long, pretty things but seldom gives them the chance they deserve. All the how-to fishing books contain passages about how good streamers are in the spring, but far too many anglers don't pay attention. Yep, we tie one on from time to time, give it a few half-hearted casts and go back to wet flies or nymphs. If one sticks with the big, long flies and fishes them slower and deeper, for at least an hour, he just may hook the biggest trout of his life.

Early season streamer fly fishing is most successfully done with a sink-tip line. I don't like to add any weight to the streamer or leader because I think it deadens the action of the fly. The best initial approach is to cast the fly across-stream and slightly downstream, allowing it to sink until the fly is nearly on the bottom before beginning the retrieve. Bring it back slowly with short, smooth strips of the line by allowing the line to slide beneath the index finger of your rod hand. If a strike occurs, tighten the finger and set the hook.

The absolute wrong way to move a streamer fly is by moving the rod tip in sporadic little jerks. If that's the way you do it, stop. Every time you jerk the rod tip, you create a sag in the line between the rod tip and the fly. If a trout strikes while that "sag" is there, chances are you won't feel a thing. The fish is gone before you can react, even if you see the flash.

Keep the rod tip within a foot of the surface and strip with the off-hand (the one not holding the rod) and that annoying sag will be eliminated.

Streamer patterns are just as plentiful as are other fly types and nearly every color combination under the sun has been tried. There are three old stand-bys, however, that will catch any trout in Pennsylvania, if presented correctly.

- Muddler Minnow. This fly is a number-one first choice, absolute best of all. If you don't have several "plain brown wrapper" Muddlers in your vest, stop reading this and go out and get some. There are some other lookalikes that work well, but every fly shop carries Muddlers. If they don't, the owner needs psychiatric help. Every Pennsylvania trout stream contains sculpin minnows or some minnow that resembles a sculpin and all trout love 'em. Enough said about the Muddler.
- The Black Ghost is the number-two streamer. This offering is basically a black and white fly. It works because the other common minnows trout feed on are mostly dark on their backs and white on their bellies. Ok, so the Black Ghost is white on top with a black body, but the trout don't seem to care. If they won't hit a Muddler shuffled along the bottom, the Black Ghost is the next choice. Move it a little faster.

• Mickey Finn. This third choice is another long-time favorite and happens to be a pure Pennsylvanian. Created by John Alden Knight back in the 1930s, this silver-bodied red-and-yellow bucktail is a wonderful "attractor" fly.

I've long supposed that Knight thought of this fly as a suggestion of a tiny trout. Perhaps. It's not important what the trout think it is. It is important to know that all trout, even the snooty brown, will smack a Mickey Finn at times when the most artfully conceived lookalike won't get a tumble.

The most useful hook sizes for trout streamers are 6 and 8, but it's not a bad idea to have some in sizes 10 and 4.

Dry flies

As this is being written, a fast-forward replay of opening days past is flashing through my head. Some of the scenes recalled include ice in the guides, monumental downpours, near hurricane-force winds, half-dry streams, blazing sun and surprisingly some perfect dry fly days.

Blue duns, caddises of various shades and a wide assortment of land creatures that are celebrating spring by being out and about can bring trout to the surface in a feeding frenzy. You'll know it's happening. Fish are rising everywhere and the poor guys with cheese balls are going nuts.

The beauty of an April "hatch" is the lack of caution displayed by the winter-weary trout. Oh, they're not total pushovers, but almost any decent cast to the last ring on the water will get a look. As with streamers, there are three "must" dries that you shouldn't be without.

- The Adams is to dry fly fishing what the Gold Ribbed Hare's Ear is to wet fly fishing. It's the ace of spades in April and for much of the season on many waters. When I see rising fish in April, I tie on an Adams first. It suggests many brownish-gray mayflies and the caddises and stone flies, too. Don't be without the Adams in sizes 10, 12, 14, 16 and 18.
- Quill Gordon. Because so many early flies are bluish-gray, you have to have one of the "dun" colored patterns, and the Quill Gordon is the king of them all. Every worthwhile fly fishing shop has them. Sizes 14 and 16 are best.
- Letort Cricket. You need a black bug of some sort to cover the multitude of land creatures that fly onto the water in April. Some anglers cover this situation with a Black Bivisible, but a Letort Cricket, as tied first by Ed Shenk (another Pennsylvanian, by the way, and *Angler* contributor) is much better. It does indeed suggest a cricket, but it will do very well for a host of black beetles. Sizes 12, 14 and 16 are right for April.

It's difficult to get into the "depths" of early spring fly fishing without applying a heavier dose of subjective ramblings about which flies to use on which waters. I've given that some thought—but got stuck in a pool of truth.

The truth is that trout of the Poconos or trout of the so-called "limestone regions" or in any other region of the Keystone State react pretty much the same when the little yellow colt's foot blossoms show their faces. Like anglers, the finned partners in the greatest sport on earth seem to be a part of the renewal process of spring. If we do our part, with good intentions and a modicum of skill, they'll do theirs and grab our baits and flies with gusto. They'll not be so "friendly" as the season progresses, and we'll have to draw on still more tricks (and good old fashioned luck). But would we have it any other way?

Natural Bait: Best Bet for Opening Day?

by Nick Sisley



here will be guys and gals flailing flies opening day and opening week of trout season. Some of them will catch fish. But the majority of nimrods will dunk bait. There's no easy road to success. Using bait doesn't ensure mastery. In fact, the expert bait fisherman has often spent as much time learning his avocation as the dedicated fly fisherman.

With a few tips and the right bait, you can fish your favorite stream or lake and be especially effective. As a fly, bait has to land naturally, softly, so it won't spook your quarry. Also, as with fly presentation, it pays to work your bait naturally, tumble it through and swing it around the trout-holding water as if it were the real thing.

Here are more basic live bait strategies.

Worms

Worms are readily available, as close as your shovel, your local tackle shop, many gas stations, and specialized bait stores. We're not talking nightcrawlers here, but tiny red garden worms. Fish them on spincast or open-face spinning outfits, even on a fly rod. With the latter, spool up with only monofilament on the reel—no fly line. Six-pound test is about right for mid-

A minnow threaded and hooked to a minnow rig can be deadly on opening day.

April, no matter which type of reel we're talking about. Some anglers go as high as 8-pound, a few as low as 4-pound.

To the terminal end tie on a small hook with a relatively short shank. Many even go to the nearly shankless salmon egg hooks. Sizes 8 and 10 are probably used more than others. Some anglers like gold hooks for the flash. Others swear by the tough-to-see-the-hook approach. Pinch the right amount of splitshot 12 to 18 inches above the hook. You need enough weight so you can make short casts, but you don't want too much weight—only enough so that the worm skims over the bottom.

If the lead ticks the bottom rocks occasionally, you're perfect. Be willing to add and take off splitshot often, adjusting to varying stream flows and depths. Doing so is a key to success. Affix the red worm onto the hook only once—around the mid-point. This lets it look more natural.

Flip your rig upstream or quartering upstream. Stay out of sight as much as you can, keeping a low profile, and walk as

softly as possible. Before you cast, select the route you want to tumble your worm back through. This is where experience at reading water is so helpful, but it's difficult to read water without actually getting out and trying.

The rod tip should be slightly elevated but always moving as you adjust for the nuances of stream flow and depth. Keep the worm moving, but don't hurry it. Mentally make a stronger bond between your hands and the moving bait—to make the worm act as natural as possible. The whole idea is that you want the worm to tumble right into the trout's lair so that the fish won't have to move for the worm. This won't happen in every case in which a strike occurs, but take that approach.

Salmon eggs

Salmon eggs should be worked in the same manner. Terminal rigging should be the same as for red worms, but when using eggs, go with the nearly shankless salmon egg hooks. One egg is more natural, but two or three might be more appetizing to the trout.

Salmon eggs come in many different colors. One year a special fluorescent is red hot. The next year it's another color. It Use smart tactics and the right bait to score on opening day. Remember to work baits naturally, tumbling them through trout-holding water.

does seem, though, that trout have color preferences, incredible as that may sound. While browns and brook trout are fooled by salmon eggs, this tends to be *THE* bait for rainbows.

Minnows

Because of the ease with which worms and salmon eggs can be rigged properly, they're tough to beat. Minnows require a little more know-how and practice. An angler working a "minnow rig" can be wicked right from the start of the season through to the end.

Here's a short-term course in affixing the minnow via what I call the "minnow rig." Tie up short 6-inch leaders, swivel on one end, loop on the other. Include a colored glass bead and a spinner for attraction—both slide on the mono of the leader. During the retrieve the bead rests on the minnow's mouth and the spinner above is free to spin. Attach the swivel section to the end of the line from your reel.

Next, you need a needle three to four inches long, a slot (instead of a common eye) on the non-pointed end. Carefully thread the needle through the mouth of the minnow, and then start the point out to the vent. Before pulling the needle through, attach the loop on the short leader rig to the needle's slotted eye. Now pull the needle through the minnow. The line will come with it. Using either a double or a treble hook, insert the leader loop into the hook eye. Then pull the loop down over the hook points before snugging it up to the eye. Next, pull on the opposite end of the leader, gently working the hook eye back up into the minnow's vent.

With the double hook here, this minnow rig is more weedless, because both hooks ride up alongside the minnow's belly. Use a treble hook, and one of the three hook points hangs directly down not as weedless but perhaps it has better hooking qualities.

Until you gain some dexterity at rigging a minnow with a needle like this, it takes far longer than simply hooking one through both lips, through the eyes or across the back. However, a minnow rigged with the hooks behind is so much more effective because trout strike at the tail end—where you have the hooks.

But you don't fish a minnow on a rig or otherwise quite the way you fish a worm or salmon egg. Instead of casting upstream or quartering upstream, cast across-stream, or better yet, quartering downstream. You still have to attach the right amount of splitshot (for current and depth), and you still have to manipulate the rod tip so that the minnow skims the bottom and doesn't hang up (at least not often). You also have to work overtime at making the presentation look natural. Reading the water is every bit as important as well.

The minnow's head is aimed in your direction as you work it through the pocket. You don't tumble this one into the trout's lair. You "swing" it past, so that the fish has to move at least a short distance to take the minnow. But the hook points are on his side of the minnow! Not so if you hook the minnow via the lips, eyes or back.

Salted minnows are easier to handle. Live minnows are probably best except on those days when the trout you're after are particularly active. That's when either bait tends to work equally well.

Corn, cheese

Both these baits are more associated with lake fishing, but there will be hundreds of thousands of lake anglers out there opening day. Further, corn and cheese can be fished in streams, too. I remember one small pond where it was easy to see the numerous palomino trout. My partner and I fed them a steady diet of nymphs, wets, streamers, miniature jigs, small spinners and more. Those brightcolored trout wouldn't even turn their heads. But when Buddy balled up a wad of Velveeta on a salmon egg hook, those trout couldn't resist. For the rest of the morning we caught those palominos with what would have to be called impunity.

If you're fishing a lake, you'll want to use some type of slip sinker instead of splitshot. When the trout picks up your corn or cheese-laden hook, he's going to want to mouth it. If the fish feel added resistance (weight of the shot), they will often drop the bait immediately. Try a little sliding barrel sinker on the line from your reel, then add a swivel, and then a short leader to which you add your hook. Make the hook small. Keep adding corn, one kernel at a time, until the hook and

shank are covered. With cheese, wad up a ball (place your cheese in an inside shirt pocket to keep it soft) and cover the hook.

Most strikes from trout in lakes are going to be subtle, a nibble at best. To telegraph those delicate strikes, attach a small bobber to the line between the reel and the first rod guide. It's amazing how much such a bobber will hop around when a trout mouths your corn or cheese bait.

Where to cast

Generally, the big "holes" are going to hold the lion's share of the trout on opening day. Such places are also going to hold the lion's share of the fishermen. Because the across-stream or slightly quartering downstream cast has been recommended for fishing minnows, you should do so only on reasonably sized trout waters. Across-stream casts can't be effectively accomplished when a creek is only a few feet wide. But these smaller streams are perfect for tumbling a worm, salmon egg, cheese or corn back toward you.

Also, the smaller the stream, the better it lends itself to a fly rod with a reel spooled with mono. Fly casting isn't necessary. You "flip" the bait with your wrist, underhanded. Learn how to hit a dime softly at 12 feet and you're on the road to becoming known as a small-stream vacuum sweeper.

Hit every pocket that looks like it's running a bit deeper, if only inches deeper. Fish the rocks. Naturally, trout love to lie behind them. Cast above, probe one side with your naturally rolling worm (or whatever), then the other side. Be particularly thorough working where fast water slows into a pool, even though that pool might be tiny, compared to what you would normally call a trout pool.

When you cast quartering downstream with minnows, wear polarized sunglasses that cut glare and permit you to see better through the water surface. Again, work the rocks. Also, work every tiny pool where faster water above slows into deeper (however slight) water below. With the first cast, work the water closest to you in such a mini-pool. On other casts increase your distance by a foot or more.

Entire books have been written on baitfishing, and numerous book chapters have been devoted to baitfishing for trout. I haven't covered everything from A to Z here, because the object is to provide a few practical, basic points. Incorporate several of these baitfishing tips on opening day and opening week to raise your score.

Enjoy the Wild Trout Experience

by Don Douple

Ever since I was a kid I'd heard and read stories about Slate Run. They tell about the great hatches in April, the difficult, low, clear waters of summer, and the excellent population of wild brook and brown trout that is protected by fly-fishing-only regulations.

What more wonderful way is there to enjoy our Pennsylvania environment than to catch and release some of the world's most beautiful fish! Three years ago I finally got up there for opening day.

Understanding and catching wild trout with flies has been my specialty for many years, so I knew what to expect that cold, cloudy day. Most people would be down on Pine Creek fishing for stocked trout, and because the run has not been stocked for many years, I might get some solitude in the afternoon when fishing is best.

As I approached the first pool about 11 a.m., the size 18 blue quills were already hatching. Of course, I spooked many fish as I waded into the middle of the pool to the best casting position and knelt down on a comfortable sandy spot with the water level up to my waist. Then I froze. As the trout became accustomed to their intruder, they resumed feeding.

First the little ones fed, and then the 10-inchers moved into their feeding lanes. Within 25 minutes, 30 trout were rising in the pool, including some big ones chopping the surface. An occasional plume of water splashed as a golden brown tail kicked the quiet surface.

What a place to be! With my silhouette as low as possible and the "blend-in" colors of my outfit, I had become part of the trout's scenery. Casting an imitation upstream with a natural dead drift in the 20-to 40-foot range, then downstream with a swing and twitch, in less than an hour I caught and released 10 trout from 8 to 13 inches. Plenty more were still rising, and my knees were cold and sore.

Then whammo! Like a shot in the dark the trout disappeared instantly, spooked royally. What did I do? Was it a sudden movement? Did a heron fly overhead?

No. Here came two fishermen over a hill 100 feet away, clicking and clacking the rocks under foot as they approached. One wore a blaze-orange hat, a definite no-no. They stood on the stream bank, and their feet were at my eye level as we exchanged pleasantries. A lone 5-inch brookie rose on the far side and one man said, "Hey! There's one; let's see you catch it!"

Finally, I stood up, said they could fish here if they wanted, and left. They had no clue about wild trout. I repeated a similar sequence at the Frying Pan Hole, and with still more people upstream at 2 p.m., I chugged up the hill and drove to Cedar Run.

Most fishermen grow up chasing stocked trout. So did I. It's fun! But some have lost touch with the spooky ways of the wily natives. Let's take a look at some of the common myths about wild trout. "Wild trout are only found up in the mountains, the backwoods, walk-in areas and headwater brooks."

The truth is that wild trout live wherever water conditions are suitable, often along highways, in towns, in large streams, and even in rivers, while many "walk-in" remote streams and headwater brooks are barren of wild trout.

Our state is full of unknown "backyard" creeks with fine trout fishing, and many of our heavily stocked "high pressure" streams also contain fine native populations. I am always on the lookout for "new" places to explore with a fishing rod.

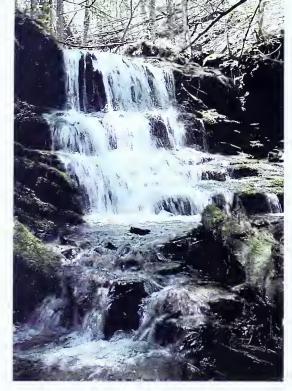
"Only expert, dyed-in-the-wool pros can catch wild trout of any size. We average guys have no chance."

The truth is that average guys can and do catch them, but they don't realize that the trout were never stocked. So many times I have talked with anglers, sometimes kids, with creels or stringers of fish containing wild trout, and when I explain this, they don't believe me. Believe it now.

The most reliable way to identify a wild fish is to examine the fins for defects. A hatchery trout's fins are almost always ragged or frayed on the rear edge, and usually one or more fins have bent, wavy or stubby rays. On the other hand, wild trout fins are beautifully perfect, with few splits.

Average guys do catch wild trout, but they don't realize the trout were never stocked. Wild trout live wherever habitat is suitable. Our state is full of unknown places with fine wild-trout fishing.





The old idea about native fish having bright colors is unreliable. Some strains of wild brooks and browns are plain in color, while stockies that have survived in streams for a while "color up" brightly.

Wild trout color patterns differ from stream to stream. Some browns are speckled with brilliant red, with golden yelloworange flanks, white and black striped ventral and anal fins, and red-edged tails, while other wild strains have no red at all. They are silvery instead.

One favorite brookie stream in the Poconos has dark-purplish males with coppery flanks, while the females are silver gray. Yet, on the other side of the same mountain flows a stream containing brookies with brilliant cardinal-red lower sides. I would never kill these for a meal.

"Wild trout are small, five inches or six inches long, and anything over nine inches must be stocked. Bigger trout are holdover stocked fish that grew up in the stream."

The truth is that although there are some infertile streams that cannot produce natives of legal size, streams grow trout of all sizes, some quite large, browns over 18 inches, and many adult-sized browns from 11 inches to 16 inches. Brookies commonly grow to 10 inches, but any over a foot is a biggie.

The "holdover" stocked fish is myth. Research shows that most stockies are gone in a month or two, and remaining ones lose weight. Of course, there are some survivors, and some fingerling stockings can be very productive, but chances are, if you catch a big, beautiful trout with perfect fins, it's wild, and if you catch a big, beautiful stocked trout, it came off the truck that size.

"If a stream seems full of sub-legal sized trout, they are "stunted" or overpopulated and should be thinned out."

Nonsense. I've found that people who repeat this line usually can't catch the bigger ones. There are many environmental reasons for trout population problems, and no fisherman can proclaim to know solutions without in-depth scientific study of the individual stream by qualified experts, such as Fish Commission biologists.

"Wild trout streams simply cannot produce enough fish to provide sport for many people."

Wrong again. Every stream has individual physical, chemical, and biological capacities to grow fish. Many of our best wild trout streams maintain year-round populations of 30 to 100 pounds of trout per surface acre, and some have over 1,000 trout per mile. This is more than many stocked streams.

Our biologists say that our hatcheries produce about twice as many hatchery trout of adult size per year as there are wild trout in our streams. But remember, the stocked trout are mostly caught in a month or two. So if you want to improve your catch during seasons other than the spring stocking period (and fall lake stockings), you should learn the following wild trout sense.

• How to find a wild trout stream. The single most important ingredient of a rich trout producer is its water temperature. Use a thermometer this summer. If daily maximums read 72 degrees or less, you're in luck. Up to 75 degrees is OK, but daily



maximums greater than 76 degrees may hold trout but little reproduction there. If you see 80 degrees, forget about wild trout and hope for a white truck next spring.

- Avoid streams below small dams, lakes and ponds. Bass water of 80 degrees pouring over a sun-baked concrete spillway is no place to find wild trout.
- Avoid streams that freeze solid in winter. Springs that cool streams in summer also warm them in winter, giving trout more days to grow to their optimum temperature range. Many of our best trout producers never freeze.
- Look for small-leaved plant life, such as watercress, duckweed, moss, grass and pondweed. Large-leaved plants such as water lilies, pickerel weed, and arrow arum indicate warm water and chubs, sunnies and bass, not trout.

- Find spring areas. The geology of a region lets rainwater seep deep underground and flow into a stream to keep it cool in summer. A stream's temperature is a constant battle between weather influences and spring water in-flow. Limestone regions usually contain wild trout streams.
- Avoid streams with poor streamside shading such as overgrazed pastureland. These areas warm quickly in summer. Assuming the creek is not polluted with mine acid drainage, acid rain, or other problems, you may have discovered a winner!
- Look under riffle stones for insect life, but if you find lots of hellgrammites, damsel flies and dragonflies, you are probably in a warmwater area.
- Join clubs like Trout Unlimited. A little friendly advice can save miles of legwork.



Catching wild trout

The single most important problem to solve is to avoid spooking the fish. Most people are unaware of wild trout because they scare the fish before they get close enough for a cast.

- Fish when others don't. Avoid crowds. Be the first to fish a place. If others are spooking fish, leave pronto!
- Move upstream, not down. Fish face the current, so you sneak up on them from behind where they aren't looking. Fish that see you and that still feed can be selective to a particular species of insect, a fun challenge.
- **Be quiet.** No shouting, no clicking rocks with your feet.
- Use boulders, trees and stream banks as cover when stalking.
- Wade deep. The lower your body is to the water surface, the closer you can get to a fish. Learn the principle of the trout's "window." No standing on high banks.
- Cast farther. Learning to make longer casts, 30 or more feet, is better than approaching too close.
- Use longer leaders, 10 or 12 feet, with longer, thinner tippets. Use lots of 6X tippet. You'll catch more.
- Keep moving upstream, hitting every likely spot with a few casts each, moving up to fresh quarries. Or put your waders in park and wait out the pool until the fish begin feeding again. Don't move much.
- Fish drag-free natural drifts. Let the current take your fly to the fish.—DD



No-Till Farming and Water Quality in Pennsylvania

by Joel Myers and Barry Isaacs



No-till farming in this era of advanced agricultural technology offers significant potential for improving stream water quality. No-till farming can reduce soil erosion and the resulting sedimentation in streams by

as much as 80 to 90 percent, when compared to traditional moldboard plowing. However, the misunderstood association of no-till with heavy pesticide use has led many individuals to believe that no-till farming always adversely affects our environment.

What is "no-till"?

No-till may be defined simply as planting any crop into plant litter (crop or weed residues) without using any tillage. Soil erosion and water quality benefits from no-till increase proportionately with the amount of residue that remains on the surface after planting. The higher the amount of residue, the greater the soil protection from the impact of raindrops and erosive surface flows.

Several clear advantages to the farmer result from no-till planting methods:

- Soil erosion is drastically reduced.
- No-till farming is one of the most costeffective conservation alternatives that is available to agricultural producers.
- No-till can reduce farm labor for crop production by more than 50 percent.
- Fuel required for crop production is significantly reduced.

Reducing stream pollution

Take a closer look at how no-till can also significantly reduce stream pollution. Siltation is the result of soil particles washing into streams or other waterways. It is recognized as the most common pollutant of our Commonwealth surface waters. The most effective no-till methods use crop residues or cover crops to provide a protective mulch over the soil surface. Consequently, not only are soil particles themselves held in place, but materials attached to soil particles are also retained in place. Materials commonly attached to soil particles include pesticides, organic compounds and nutrients from manure and nutrients from chemical fertilizers. All of these materials produce effects detrimental to the quality of our streams.

Historical use of pesticides

The use of herbicides in agriculture began long before the advent of modern notill planting methods. As early as the late 1800s, pesticides were used to control pests such as grasshoppers and locusts in the western part of the United States. Compounds used to kill insects are referred to as insecticides. Other specific types of pesticides include herbicides (compounds to control weeds) and fungicides (compounds to control fungal diseases).

Beginning shortly after World War II, compounds such as atrazine were gradually accepted in corn production. These compounds were initially used to reduce the number of cultivations in corn. Over the decades, cultivation has been virtually eliminated, reducing farm labor requirements and damage to corn stands by cultivating.

In the late 1940s, the use of these herbicides was limited. However, during the 1950s and 1960s, the use of these early herbicides, plus others developed specifically for corn production, increased significantly. In the 1970s, as the intensive production of corn was promoted on a national scale, the use of pesticides, particularly herbicides, continued to increase.

Fortunately, as we moved into the 1970s and 1980s, two trends emerged: First, more harmful pesticides were removed from the market, and second, safer compounds that required smaller amounts of active ingredients became available and were accepted by farmers.

This discussion of the historical use of pesticides in agriculture illustrates that the use of herbicides increased *independently* of the acceptance of no-till farming, which began to increase in the early 1970s *after* the use of herbicides had shown its greatest rate of increase.

No-till and pesticides

So what is the role of *pesticides* in notill farming? Because there is no weed-killing tillage involved in no-till planting, the *additional* use of a herbicide is simply the substitution of a herbicide for the weed-killing tillage, which normally precedes establishing a crop.

Compounds used for this purpose are commonly known as "burn-down" herbicides. They cause the obvious change in the color of vegetation, from a healthy green to dying brown, so they are considered by some to be environmentally questionable. However, because these compounds are applied to and absorbed by the plant, they are less likely to move over the soil surface or through the soil profile. "Burn-down" or contact herbicides have a much shorter period of effective activity than most other types of herbicides commonly used in agricultural production.

Under some no-till circumstances, other herbicides already in use may be increased slightly because of absorption by increased amounts of crop residues. Because the increased amount of herbicide is tied up by crop residues, it is not likely to contaminate field runoff or ground water.

In a plowed field, herbicides are usually applied directly to the soil surface without the protection of surface cover. Under these bare soil conditions, insoluble herbicides associated with soil particles may be lost from the field during the erosion process.

The future

No-till can play an important role in the future. Modern planting equipment is available to achieve excellent stands of all field crops. No-till technology can also be integrated with other recent trends in agriculture, which collectively should have a beneficial effect on water quality.

One current trend is planting more small grains, forages and cover crops than were planted during the 1970s and early 1980s. No-till drills can be used to plant these crops.

One common misunderstanding is that all no-till planting *requires* the use of herbicides. In many instances no-till planting of close-grown crops such as small grains, forages, double crops and cover crops does not require the use of *any* herbicides. In fact, no-till can actually reduce weed competition in some cases because without tillage, new weed seeds are not brought to the surface where they can germinate.

Cover crops and another emerging trend called inter-cropping can further reduce weed competition. With year-round cropping, weeds have continuous competition, thereby reducing subsequent weed competition. When a rotation of crops is planted using no-till methods, the results are reduced soil erosion, potential reductions in pesticides, and improved soil tilth and structure. These conditions favor improved plant growth and crop production, which in turn further increase the amount of protective crop residues or mulch.

These improved cropland ecosystems have the potential to improve both surface and ground water quality on a long-term basis. Reverting to traditional tillage and mechanical cultivation would result in severe soil erosion and sedimentation that could drastically impair our surface water quality.

Joel Myers is an agronomist and Barry Isaacs is a biologist of the USDA Soil Conservation Service. For more details on no-till farming, contact them at: Suite 340, One Credit Union Place, Harrisburg, PA 17110-2993. The phone number is (717) 732-4403.

Cooperative Nursery Program Recognized

The Fish Commission Cooperative Nursery Program recently won first place in the Take Pride in Pennsylvania program in the category Public/Private Partnership. The program now enters the Take Pride in America competition with winners from other states. The "Take Pride" program was established to recognize organizations

and individuals who have made contributions to improve public lands and resources.

The Commission Cooperative Nursery Program began in 1932. Today, 154 sportsmen's organizations throughout Pennsylvania operate 183 cooperative nurseries that include 178 trout, salmon and steelhead nurseries, four largemouth bass nurseries and one walleye nursery. Last year those nurseries stocked more than 1 million trout, salmon and steelhead, and some 800,000 walleye fry in waters open to public fishing.

The program has had sponsoring organizations participate from one to 50 years, says Cooperative Nursery Unit chief Cecil Houser. He believes that by involving people in the nursery program, the sponsors bring about a greater awareness of our natural resources and the needs of future generations.

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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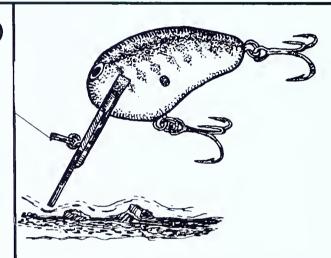
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ANGLERS NOTEBOOK by C. Boyd Pfeiffer



Lures that scrape the bottom make ideal crayfish imitations and are excellent for smallmouths, largemouths and walleye. Use plastic crankbaits that are designed to go deeper than the water fished to ensure this bottom-scraping action.

Tune plugs that run off to the side by bending the line tie to one side. If the lure runs to the left, hold the plug so that it faces you and bend the line tie to the right. Bend the tie the other way if the plug runs to the right.

Use candle wax to lube and coat the male section of any glass or graphite rod ferrule. Before coating with wax, be sure to clean off any dirt that might have accumulated. The wax serves to hold the two parts in place and to allow for easy separation.

Use a large piece of flat, matte-finish poster board or blotter in back of your fly tying vice to relieve eye strain. Use soft colors such as light green, blue, tan and yellow. Change colors for eye relief during long fly tying sessions. When fishing in thick weeds and you want to sink a worm rapidly, use a heavy worm weight and peg the weight to the line just above the worm. The pegged weight pulls the worm down to the fish instead of letting it float on the weeds.

For a simple way to add a rattle to a worm, slide a plastic or glass bead or two onto the line after slipping on the worm weight. The beads will be between the worm and the weight. Any slight jiggle with the rod causes the weight to strike the bead and make a fish-attracting noise.

Never place rods, reels, tackle boxes, fishing vests, or other gear on top of the car. It is too easy to drive off with them still up there! Instead, place all tackle in the trunk. For a level "resting place" that is an alternative to the roof, place them on the front hood. That way you will see them before starting the car.

If fish strike particularly lightly when fishing a worm, modify the standard Texas rig. Instead of sinking the hook into the center of the worm, thread the point lightly through the side of the worm so that the hook tears loose easily for instant hooking of any fish.

Whether caught or bought, protect bait by covering it with a white cloth during the hottest summer days. This is true of all bait, but particularly true of land baits such as crickets, grasshoppers, grubs, beetles and similar baits stored in jars or containers. Water-stored baits such as minnows, crayfish and hellgrammites should be protected with frequent changes of cool water.

ıllustratıon — Rose Boegli

ANGLERS CURRENTS

New Waters, Expanded Trout Fishing Opportunities in 1990

New waterways have been added to the 1990 stocking list, and the stocking in some waters already listed has been expanded. Here's an overview of these changes.

New Waters

Wysox Creek, Bradford County. A new 8-mile section of Wysox Creek is approved for the planting of catchable trout. The section is from the T-187 bridge downstream to the mouth. This new trout fishery will be stocked preseason-only in 1990.

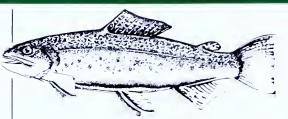
Minsi Lake, Northampton County. This 122-acre impoundment has been stocked for several years for winter fishing and will be added to the spring catchable trout program. The lake is expected to provide additional angling opportunities in an area where trout fisheries are at a premium. Preseason and inseason stocking will begin in 1990.

Allegheny Creek, Berks County. Allegheny Creek returns to the catchable trout program after it was removed in 1989 because of posting problems. Posting problems have been resolved and the 2.9-mile stream section from the T-344 bridge downstream to the mouth will be stocked inseason in 1990.

Little Beaver Creek, Lancaster County. A new 4.6-mile section of Little Beaver Creek approved for stocking is located in a rapidly developing suburban area. The section is from Calamus Run downstream to SR 2031. The stream is scheduled to be planted with trout preseason and inseason in 1990.

Meetinghouse Creek, Lancaster County. A 2.3-mile section of Meetinghouse Creek will be added to the catchable trout program. The section is from T-441 downstream to the mouth. This new section is expected to be popular in a region of high potential angler use. Preseason and inseason stocking will be scheduled in 1990.

Neshaminy Creek, Bucks County. Neshaminy Creek will be a welcome addition to the catchable trout program because substantial trout fisheries in this area are rare. A 3.9-mile stream section from SR 0611 downstream to T-381 (Mill Road) will be scheduled for preseason and inseason plantings in 1990.



Browns Creek, Greene County. Trout fisheries in the extreme southwestern corner of the state are few. A 2.2-mile section of Browns Creek from Garners Run downstream to the mouth will be added to the catchable trout program in 1990. Preseason and inseason stocking will be scheduled.

Repine Run, Indiana County. A new 1.7-mile section of Repine Run is approved for the planting of catchable trout in 1990. The section is from the headwaters to the mouth. Stocking will be conducted only on a preseason basis.

Briar Creek Lake, Columbia County. A re-evaluation of the lake in 1989 has upgraded its classification and inseason stocking will begin in 1990.

Towanda Creek, Bradford County. An additional 1.3-mile section of stream from SR 3005 downstream to SR 3001 will increase the allocation for 1990.

Mill Creek, Lebanon County. Inseason stocking will be added in 1990. Formerly, only preseason stocking was scheduled. The addition of inseason stocking should be welcomed in Lebanon County, where few stocked waters exist.

Conewago Creek, Adams County. A reevaluation of the classification and additional stream length will increase the allocation to both sections of Conewago Creek in 1990.

Quittapahilla Creek, Lebanon County. A 4.0-mile section between SR 0323 and the Annville sewage treatment plant will be added to the catchable trout program. Preseason and inseason planting will commence in 1990.

Manada Creek, Dauphin County. A 3.3-mile extension downstream to Orchard Road (T-455) will be added to the existing stocked water.

East Branch of Standing Stone Creek, Huntingdon County. The 5.3-mile section of the East Branch of Standing Stone Creek from T-517 downstream to the mouth returns to the catchable trout program after it was removed in 1985 because of posting problems. Please be considerate of the landowners when visiting this stream, and all open waters.

Extensions, classification changes Shenango River, Mercer County. An additional 0.5-mile stretch will be added to the previous section in 1990. The tailwater section will now be stocked from Shenango River Lake downstream to the SR 3025 bridge.

Conneaut Creek, Crawford County. A 3.3-mile section of Conneaut Creek from SR 4010 downstream to the T-885 bridge will be added in 1990.

Little Mill Creek, Jefferson County. An additional 0.5-mile section of Little Mill Creek from T-452 downstream to the mouth has been approved.

North Fork of Redbank Creek, Jefferson County. A re-evaluation of the recreational use potential on the North Fork of Redbank Creek has increased the allocation to the section of stream from the SR 4006 bridge downstream to the confluence with Pekin Run.

Spruce Run, Union County. A reevaluation of the classification of Spruce Run has increased the allocation for 1990. The revised 6.5-mile section will be stocked from the Cooper Mill bridge downstream to the state forest boundary at Spruce Run Reservoir. Formerly the stream was stocked only during preseason. An inseason planting will be added in 1990.

Mountain Lake, Bradford County: Additional data collected in 1989 will add an inseason planting.

Moon Lake, Luzerne County. Additional data collected in 1989 will increase the inseason allocation.

New delayed-harvest areas

Two new stream sections, Deer Creek (Allegheny County) and Manada Creek (Dauphin County), will be added to the delayed-harvest program for 1990. The Deer Creek delayed-harvest section is 1.6 miles long from 0.4 miles above the SR 0910 bridge downstream to Lower Rose Ridge Golf Course. The section on Manada Creek is 1.8 miles long from Fogarty Road downstream to Furnace Road (T-616). Fishing will be open year-round and regulations will be under delayed-harvest artificial-lures-only management.

Two plantings will be made. However, catch and release will be in effect from March 1 to June 15 after which time anglers may harvest three trout per day. To avoid high hooking mortality, artificial lures, flies, streamers or spinners will be required.—Martin T. Marcinko, Chief, Coldwater Unit Leader.

April Trout in the Endles.

here's a special feeling you get, associating with mountains. Not too many things can help restore the soul in only a few hours. One is wandering and fishing the quiet and majesty of your favorite mountains. Mine are those that so lovingly cuddle us here in our valley. The old worndown, low, rolling mountains we enjoy are the "Endless Mountains" of the Appalachians. Glaciers as much as a mile thick slid over them some 40,000 years ago. As they receded, they formed the numerous mountains, valleys, and fresh, clear, cold waterways.

The northeasternmost part of the Endless Mountains might best be defined as the glacial mountain ranges named "Kittatiny" by the Indian tribes who first dwelled here. They are bordered on the west by the Susquehanna River in the area of Tunkhannock and Mehoopany, on the east by the Delaware River in the area of Damascus and Cochecton to Equinunk, on the north by the northern borders of Susquehanna and Bradford counties, and on the south by the Lake Wallenpaupack region.

The Greater Forest City area is located precisely in the southeast corner of Susquehanna County and is just about the nucleus of the northernmost part of the Endless Mountain Range. From this nucleus and in a radius of approximately 35 miles there are over 54 glacial-formed trout waters, more trout waters than any other equal tract in the country.

In many other parts of the U.S., it is common to see boat trailers lined up for as much as a half-mile in either direction from the launch ramp, waiting to get on the water. The scene can be a melee of pleasure boats, fishing boats, water skiers and joy riders. You can get discouraged by fleets of roaring boats, loud music and shouting. In Endless Mountain country, you rediscover peace and you can always find a lake or a stream or a creek that you can just about have to yourself most days of the week. Some of these places nobody fishes. You seldom find footprints on the stones ahead of you. Some of these streams and creeks seem to keep hiding certain secret parts of themselves before they hasten to join the larger waters.

Susquehanna County

To begin, the following trout waters and their locations are in Susquehanna County.

Canawacta Creek, south branch is located off T649 and Route 171 in Harmony Township. Fall Brook is located at T601 in Franklin Twp.; Gaylord Creek, T498 in Middletown Twp.; and Gibson Creek, T446 in Gibson Twp.

The Lackawaxen River and west branch off Route 371 in Mount Pleasant Twp. is a beautiful trout stream with nine ancient stone bridges in the first five miles, one just as good fishing as the next one. Martins Creek is on Route 11 in Lathrop Twp. Meshoppen Creek and west branch is at T347 in Springville Twp. Nine Partners Creek is on T475 & 485 along Route 81, New Milford Twp.

Quaker Lake is located near Brackney, east off Route 167. The best fishing is from boats because shoreline access is limited. The lake has a Fish Commission access area and a 7½ hp limit on motors. Boat rentals are available.

Salt Lick Creek is off Route 492 in New Milford Twp. Silver Creek is off Route 167 in Silver Lake Twp. Snake Creek parallels Route 29 north of Montrose and is easily accessible. The 10-mile stretch is considered an exceptional trout stream in Susquehanna County.

Starrucca Creek is a 13-mile trout stream. To reach it, take Interstate 81 or Route 11 to Hallstead, and then go east on Route 171. It is in Harmony Twp.

Tingley Lake is a 42-acre waterway located near Harford off Route 547. Hard-water action here is good for trout. Tingley is in Harford Twp. Tunkhannock Creek and East Branch can be reached by taking Route 209 north of Gelatt. It covers about 15 miles of good fishing. The creeks are in Gibson and Herrick twps.

Wyalusing Creek and East Branch are good trout water for seven miles between Fairdale and Rushville on Route 706 and is in Bridgewater Twp. Middle Branch is off Route 267 in Middleton Twp., and North Branch is on T356 in Springville Twp.

Northern Wayne County

In northern Wayne County you will find Butternut Creek on Route 191 in Sterling Twp. Duck Harbor Pond is on T676 and T616 in Lebanon and Damascus townships. Dyberry Creek, east and west branch, is on Route 191, Dyberry Twp. Equinnunk Creek is on T682, 84 and 608 in Preston Twp. Little Equinnunk Creek is on Route 191 in Manchester Twp. Holberts Creek is east of Route 6 near Honesdale, in Berlin Twp. Hollister Creek is off T561 in Damascus Twp.

The Lackawaxen River and west branch are along Route 6 in Texas Twp. and Route 171 in Clinton Twp. It also runs along Route 590 in Lackawaxen Twp.

Long Pond is on T680 in Preston Twp. Rosner Pond Brook is off Route 170, Aldenville to Prompton Dam in Clinton Twp. Shehawken Creek is on Route 370 in Buckingham Twp. Upper Woods Pond can be located on T724 off Route 371 in Lebanon Twp. Van Auken Creek is on Route 6 in Canaan Twp. Wallenpaupack Creek's west branch is on Route 191 in Sterling Twp.

Lackawanna County

In northeastern Lackawanna County you'll find Chapman Lake on Route 247 in Scott Twp. Gardeners Creek is on Milwaukee Road in Ransom Twp. The Lackawanna River is on Route 171 in Fell Twp. Merli-Sarnoski Lake is on Route 106 in Fell Twp. Rattlesnake Creek is off T321 in Springbrook Twp. Roaring Brook is on Route 435 at Scranton. Spring Brook is on Route 502 in Spring Brook Twp., and Tunkhannock Creek south branch is on Route 92 in Benton Twp.

All these lakes, creeks and streams are easily located by referring to a Fish Commission Fishing and Boating Map or the Pennsylvania Atlas, which is available at most book stores. The Fish Commission Fishing and Boating map is available from the Commission by including with requests a business-sized self-addressed envelope with 45 cents postage affixed. The address

Mountains by Bill Feddock



without much difficulty because most of them are wadable.

Just to whet your trout fishing appetite, remember that Kevin Coutts, of Paupack, broke the state record in the spring of 1988 with his 17-pound, 2-ounce, 32-inch brown trout taken at night from Lake Wallenpaupack. Mrs. Arthur Cramer of Carbondale still holds the state record with a 24-pound, 38-inch lake trout caught at Crystal Lake, located on Route 247.

The greater Ford City area (Susquehanna County) is the nucleus of the Endless Mountains. In a radius of some 35 miles there are over 54 trout waterways.

The Lackawanna River hurries down out of Stillwater, racing and gurgling to a 600-foot total drop by the time it passes through Simpson on its way to join the Susquehanna at Pittston 35 miles downstream. It's one of the nine fastest-running rivers in the East. A lot of its length is old Indian country.

You can ford this river at most any point. It's an infectious place to go that captures a mood and satisfies a longing for nostalgia. It's the kind of place you frequent to exercise a fine old fishing rod and your choice flies. These mountain streams are a fisherman's dream with deep pools, undercut banks and sunken logs. The runs between the pools are fast, clear and gravelly, and insect hatches occur frequently.

A little ambition and a short walk from the roadways and main streams can help you discover primitive fishing spots just about all over this area. There are countless feeder rivulets and tributaries. These streams and rivulets have many times yielded the experiences of having a hefty brown take a good hand-hold on a log, brace his fins and tear himself loose from a fly and scoot away. It sure makes for interesting fishing fun.

Cold water

In the early spring with the water temperatures in the Endless Mountains Region low, few trout are going to chase a bait. You'll have to put it close to the fish, no more than a few inches away, and slowly work it. To do this is easier if you're not trying to fish the real deep holes in the streams or creeks that some fishermen say are great so early in springtime. These early season trout are more likely to come from slow-side runs, those that are smooth and not too deep. Try spots that have a slow current.

Early in spring, it is worth trying shallower water as well as deeper pools. If you're fly fishing, bottom bumping with nymphs is a great choice. When the water reaches 40 degrees, streamers fool fish. Egg sacks or small "garden hackle" are my early choices with a fly rod. You can use stone fly nymphs, caddis worms and hellgrammites on tiny hooks threaded through the head, collar or tail with very little weight, but you have to work the bottom. It's necessary to cast easy or you'll flip these small baits off the hook.

Now that it's ice-out on lakes, you can look for open-water action at inlets and outlets. By their nature, trout hang close to the shadows and any cover they can find. In tiny waters, trout usually feed on and want tiny baits or flies. In lakes, try bigger baits and bigger lures or flies.

Follow the small creeks, too. It's wise to fish all waters carefully so you don't spook the fish. For big browns, live or dead minnows fished slowly are most productive.

When you are going to select a stream to fish for trout, think



about the old adage, "if the stream talks to you, it's a good trout stream." This, of course, means that for a stretch of stream to talk, no matter how large or small it is, it will have murmuring, rippling, gurgling, bubbling and splashing sounds. And these sounds are created by the trout's favorite hiding and feeding places. These include large boulders, pools, waterfalls, sluices, logs and brush across the stream, undercut banks and rippling stretches. That's the kind of creek or stream to fish both for trout and for fun.

Flies

In these lakes, the common fish foods are crustaceans, aquatic insects and bugs, minnows and other little creatures, small mayflies, midges, caddis flies, dragonflies, and damselflies. Bigger trout are likely to take these insects underwater where you can't see them. Crustaceans in these lakes are mostly crayfish and scuds. Some lakes have leeches and baitfish.

For the lake, good fly patterns are the Gold-Ribbed Hare's Ear or the Zug Bug. If the trout ignore these, try flies that look like the real insects of the lake, like the Olive Wooly Worm or bushy colored flies. Then there are streamers like the Coachman or the bucktail Mickey Finn. The Black Marabou Muddler can also do a good job. But of all flies, try the nymphs!

Spinfishing

For spinfishing, stick to little lures. Attach a small minnow and you'll likely be more successful. Remember that only big trout hit big lures. So you have to be selective on most lakes. One big advantage of fishing the lakes for trout is that you can examine the surface for bugs and insects or whatever else they are feeding on. If there are rings on the surface, you can see the trout feeding. Sometimes they are feeding just below the surface and can fool you into using dry flies when nymphs would probably work better. You really have to try various depths.

Trying different flies or baits is an important part of lake fishing for trout. And trying different slower or faster retrieves can help. Eventually you hit the right combo. Most of the northeastern Pennsylvania waters are clear because they originate from mountaintops and underground springs moving steadily down to the valleys, creating cool, clear-water trout streams.

A good general rule when you arrive at your trout stream is to spend a few minutes each time looking for insect activity and trout behavior. A small pair of binoculars makes a fine tool for doing this. Note which way the trout are rising to feed, and how the insects are flying near or above the surface. A trout slashing hard to take escaping insects is likely feeding on caddises. A little gentle sip shows him feeding on spent insects and tiny midges.

In April in the Endless Mountains, the insect hatches are: The Little Black Stone Fly, April 15th; the Red Quill Mayfly, April 16th; and the Little Black Caddis, April 17th. The actual insect you find hatching on the trout stream is probably the one the trout is feeding on, so the nearest match to it in your fly box should become your "favorite fly for the day."

Trout are a lot like gold and silver. They're where you find them. This mountain stream and lake fishing is wonderfully satisfying and here in these mountains you can enjoy it all year long (in season, that is). It's a tradition for us in northeastern Pennsylvania. We talk about it year-round, complain of the weather, heat, rain, fog, cold, ice and snow and tough-luck days. Then some rainy, foggy early morning or evening, there we are out there again. And we wouldn't trade it for anything.



Dat Owner by Art Michaels





Buying a new boat means entering a world of fun and adventure, and you should enjoy it to the hilt.

Still, one of the biggest investments of your life could easily become the most regrettable one. Operating your own boat is different from accompanying friends on their boats. Operating a boat is also different from driving a car. You need new skills to operate your boat safely and fish effectively, and you need new information to get the most for your money.

If you plan to buy a boat, or if you've recently become a boat owner, the most important idea on which to act is that you are responsible for the safety of everyone aboard your boat. The smartest move you could make right now is to contact the U.S. Coast Guard Auxiliary or the U.S. Power Squadrons and take a boating course. You'll find the U.S. Coast Guard Auxiliary listed in the phone book in the U.S. Government section under "Coast Guard," and you can contact the U.S. Power Squadrons at the organization's national headquarters at P.O. Box 30423, Raleigh, NC 27622. The phone number is (919) 821-0281.

Furthermore, the BOAT/U.S. Foundation for Boating Safety offers a toll-free hotline of up-to-date details on boating courses. The service includes information on Coast Guard Auxiliary and U.S. Power Squadrons courses. The hotline number is (800) 336-BOAT.

Learning to use your electronics (above right) makes you a safer, more effective angler.

The American Red Cross offers boating courses, too. Contact your local chapter of the Red Cross by looking in the phone book white pages under the heading "American Red Cross."

Consider the Fish Commission's boating safety correspondence course, too. For \$2 postpaid you receive a copy of the 84-page book *Pennsylvania Basic Boating*. The chapters are loaded with practical information. To receive a copy, send a \$2 check or money order made payable to *Pennsylvania Fish Commission*. The address is: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

The U.S. Coast Guard also offers a toll-free boating safety hotline. If you have a question on boating safety, call for an answer. You may want to ask for "the kit"—free materials that give a basic, broad overview of beginning boaters' opportunities and sources. That number is (800) 368-5647.

Beyond taking a course, consider a few other ideas that can help you be a safer new boat operator.

Registration

One concern new boat owners often express is how to register a new boat. In Pennsylvania, most boat dealers can provide you with a temporary registration. The dealer sends the registration application and fee to the Fish Commission Boat Registration Division in Harrisburg. Your new boat gets the "T" stickers, valid for 60 days, while the Commission Boat Registration Division processes your registration application and assigns your boat

numbers. The owner copy of the registration application and the "T" stickers are the temporary registration documents until you receive permanent registration materials by mail.

Nautical charts

Navigation charts are the most vital tool available for safe inshore navigation of Lake Erie and the tidal Delaware River, so be sure to get the right National Ocean Service (NOS) navigation charts for these areas.

Update your navigation charts regularly, too. The National Ocean Service revises its charts when enough changes accumulate for each chart. But years can pass before new editions are published. The best way to keep your charts current is to get on the mailing list to receive the U.S. Coast Guard's local Notice to Mariners.

This weekly publication includes lists of all chart changes vital to safe navigation. Until a new edition of a navigation chart is printed, update your current charts by noting changes that are listed in the Notice to Mariners.

Obtaining the Notice to Mariners is easy, and it's free. Each Coast Guard district publishes its own notices, so you'd want to contact the district that includes the waterways you plan to frequent. To find out the right district and phone number, contact the U.S. Coast Guard, listed in your phone book's U.S. Government section under the heading "Coast Guard."

For complete details on obtaining navigation charts, contact: Distribution Branch (N/CG33), National Ocean Service, Riverdale, MD 20737-1199. The phone number is (301) 436-6990. Delaware River charts are listed in Catalog 1. Lake Erie charts are listed in Catalog 4.

In addition to getting navigation charts, order Chart No. 1. This 54-page book, called *Nautical Chart Symbols and Abbreviations*, is a useful reference that explains the meanings of all symbols and abbreviations you'll find on navigation charts. This book is a terrific help when you're trying to interpret navigation charts.

Inquire at marinas and tackle shops for other charts and maps of waterways. They can help you become familiar quickly with new waterways, and they can help you locate accesses and good fishing quickly.

Before each trip, study the maps and navigation charts of the areas where you plan to fish. In this way you can best remember danger spots to avoid, and you can trace the safest, most direct routes.



Hook your trailer safety chains (top arrow) from the bottom up, not from the top down. They are less likely to come undone. Cross your chains, too (bottom arrow). They cradle the trailer tongue if the hitch or coupler fails.

Checklist

Just as pilots prepare for takeoffs and landings by going over checklists, so should you prepare to boat with a checklist. You don't have to write anything down, even though you may want to do so in the beginning. Furthermore, as you become more familiar with your boat and equipment, you'll want to revise your checklist as more and more tasks become routine.

Be sure to test your navigation lights at the beginning of every outing, even though you might launch in bright morning sunlight and you plan to head in long before dark. If your boat has portable lights, be sure to bring them with you on every trip.

Navigation lights are vital safety equipment on every trip for two reasons. First, if your boat becomes disabled or if you need to help someone else, you may have to stay out in darkness or when visibility is limited even though you didn't plan to do so.

Second, federal law requires the use of lights between sunset and sunrise, but using your lights is wise whenever visibility is poor. In Pennsylvania that's the law—you must use your navigation lights between sunset and sunrise and whenever visibility is poor.

Angler's warning

Vertical rod holders are common on fishing boats, but when you prop rods in vertical rod holders, secure your hooks and lures with a tight line to rod guides close enough to the rod tip so that if the lures unhook from the rod guides, they'd swing too high to hook anyone. Also workable is to reel the lures or hooks flush against the rod tips.

Securing hooks high on rods stored in upright rod holders, particularly on center console boats, also eliminates the problem of someone passing too close amidships and catching a hook in the head or arm.

Similarly, be sure all your gear is stowed securely so that no one stumbles on loose items when the waves get nasty and the ride gets bumpy. Inexperienced boating anglers often back gear loosely into a corner, but a bumpy ride can slide items right under your feet. This problem is more common on small boats than on larger craft because storage space is always more precious on small boats.

Rules of the road

No doubt you've noticed that our waterways are not like interstate highways. There are few double lines, median strips and clearly defined entrances and exits that make it easy to determine which way to go.

For this reason, it's vital to learn the rules of the road—the procedures and practices boaters use to avoid collisions and dangerous situations.

Operate your boat defensively. This means never assume that another boater knows the rules of the road as well as you do.

Carefully read your *Summary of Boating Regulations 1990* because it contains basic information on rules of the road and other vital boating information.

Boat handling

Learning to handle your new boat confidently and skillfully takes practice. The main difference between operating a boat and driving a car is that a boat has no brakes. Thus, you need to develop a "feel" for operating your boat that's completely different from operating a car.

Practice maneuvering and docking in calm, uncrowded conditions. You need to learn how your boat handles in many waterway conditions, and how the boat responds to the throttle commands. This practice comes in handy when wind, waves, currents and crowds of other boats complicate docking, launching and retrieving maneuvers.

Furthermore, operating your electronics well is important because it sharpens your navigation skills. In addition, your safety depends partly on how well you operate your electronics.

Getting to know how to use a depth-sounder, a VHF radio, a loran C unit, and other electronic equipment is like learning to juggle. When you first learn, nothing seems to work. But when you get used to handling each item, everything runs smoothly.

When you take your boat out for the first few times, pick calm, uncrowded places and ask a knowledgeable boating friend to accompany you, someone who's familiar with your electronics, and who can show you how to operate this gear.

A few lessons during easy initial trips can help you be safer faster, and can save you countless hours of aggravation later. Taking time to practice also builds confidence, and confidence is an ingredient in how much you enjoy your new boat.

Whenever you launch your boat, test the electronics to make sure everything works properly.

Think also about insuring your investment. Some boat owners have learned the hard way that their homeowner's insurance provides inadequate coverage for a new boat, motor and trailer. Take a close look at your homeowner's policy. Check out special boat owner's insurance. Compare policies. Shop around for the best deal for the kind of coverage that meets your needs.

Trailering

If you trailer your new boat, practice

Publications for New Boat Owners

In addition to taking classes and soaking up much on your own, you can learn a lot from a variety of publications. Check out your local library's collection and visit the bookstore. Here are a few sources of printed matter and several useful publications.

Federal Requirements for Recreational Boats is a 24-page Coast Guard compilation of basic information for boating on federal waters. For a free copy, contact the nearest Coast Guard Auxiliary flotilla.

Navigation Rules, International-Inland is a 211-page Coast Guard manual of the "rules of the road." The book costs \$6 (Catalog number COMDTINST M16672.2A). Its stock number is 050-012-00192-8, and it and can be ordered from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Government Publications for the Maritime Consumer is the title of a U.S. Coast Guard fact sheet that describes many useful publications and includes prices and ordering information. For a free copy, contact: Chief, Consumer and Regulatory Affairs Branch (G-NAB-5), U.S. Coast Guard Headquarters, Washington, D.C. 20593-0001. Telephone: (800) 368-5647.

Index to Consumer Fact Sheets is another Coast Guard fact sheet that lists more publications that can help new boat owners. Use the address and phone number above.

Piloting, Seamanship and Small Boat Handling is one of boating's authoritative sources. It's published by Hearst Marine Books and is available in most bookstores and at some boat dealerships.

The Fish Commission has a wealth of information for new boat owners. For a free single copy of the Commission's publications list, contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673. With your request please include a business-sized stamped, self-addressed envelope.

backing up—trailering's most difficult maneuver. Here's a hint to learning this move and to performing it perfectly every time: When you back up your trailer, place your hand at the *bottom* of the steering wheel. When your hand is at the bottom of the steering wheel and you put the tow vehicle in reverse, the trailer turns in the same direction as your hand moves on the steering wheel.

Putting your hand on top of the steering wheel to operate a vehicle is common. But when you do so and back up a trailer, the trailer moves in the opposite direction as your hand moves. This problem complicates backing up a trailer and often confounds novice trailer boaters.

Practice backing up your trailer and maneuvering in a deserted mall or supermarket parking lot. Don't practice this skill at a busy boat ramp.

Furthermore, prepare your boat for launching and for hitting the road after retrieving in designated areas at the access site, not on the ramp itself. These spots are called rigging and derigging areas. If the ramps you frequent don't have such places, prepare to launch and leave elsewhere at the site, but never on the ramp.

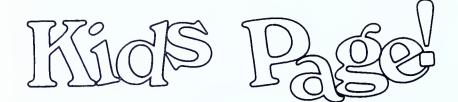
This kind of trailering courtesy at the boat ramp lets everyone launch and retrieve with the least delay even at the busiest launch sites.

Maintenance

One other vital difference between operating a boat and a car is that if you have engine trouble aboard your boat, you can't pull over to the side of the road and walk to a phone to summon help. For this reason, maintain and service your boat, motor and trailer, and all your equipment, regularly. Follow the dealer and the manufacturer's service recommendations faithfully and you'll likely have few problems. Ignoring your rig's servicing and maintenance will lead sooner or later to breakdowns and costly repair bills.

Finally, when you buy that boat, have a ball! There's no sense investing your hard-earned money if you won't enjoy your new boat! But remember that you're a boat operator now. Protect your investment by learning how to boat safely, efficiently and skillfully. Let your new boating skills contribute to your safety and to the well-being of everyone aboard your boat.





I Remember Carl

by Steve Ulsh



Many years ago, when I was in third grade, I had a classmate named Carl. We played on the playground together, sat side by side in class, shared books, were in the same reading group and did most of the things that you do at school today.

March in my hometown was just like any other place in Pennsylvania. The trees were starting to bloom, the snow cover was melting, the soggy ground was beginning to give up its watery load and above all, the rains came. Rains that would make puddles to jump in, bring out umbrellas and boots, postpone long-awaited baseball games and make adults say, "If March is here, can spring be far behind?"

I don't know who first told me that Carl was missing—my parents, my classmates or my teacher—but Carl, who lived near the creek, had fallen into the water one evening after school and was swept away.

I still remember hoping that Carl would be saved, or perhaps that the person who had seen him go was mistaken. As days passed, I can still picture the firemen in their boats with the long, ugly grappling hooks trying to find Carl. A big net was stretched across one point in the creek in another attempt to find him.

Normally, falling into the creek was no big deal. It was usually low enough to wade in spots. March was a different story. The rains and snowmelt had turned the usually calm little creek into a raging torrent of cold, muddy water.

Why was Carl there? Was he fascinated by the speeding water with its loud, rushing noises? Was he pretending he was fishing? Was he just walking along the creek on his way to somewhere else? Nobody knows.

Carl apparently slipped on the muddy bank and was swept away by the water. It was too swift for him to grab a nearby branch and too deep for him to swim, and the cold water chilled his body quickly so that he couldn't move.

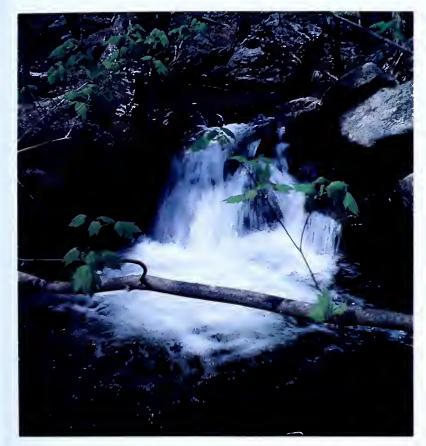
A fisherman found Carl's body in late April or early May, miles away from where he fell into the creek.

I don't think of Carl as much as I used to. Time has a way of dimming all the sad thoughts I had for Carl when I was eight. Every once in a while, especially when I see a fast, mud-swollen creek in spring, I think of him.

What would he have become—a writer like me, a policeman, a salesman? The creek never gave him that chance.

If you're outdoors this spring and the streams are high and swift, avoid them. Fast water looks and sounds exciting, thrilling and mysterious, but it's deadly. A misstep on a muddy bank is one step too many. Be safe this spring. Stay away from high water.

On The Water OU LIFE AND WORK with Dave Wolf



Move from the base of the mountain and follow the hollow that slowly moves uphill. Move alongside the brilliant waters sparkling beneath the sun like crown jewels. Walk softly on the moss-covered boulders that line the banks like velvet carpeting. Smell the hemlock caught on the gentle wind. Notice the laurel and willows that stand streamside. Like the buildings that close in on New York City streets, they will conceal your approach to the waters.

Follow the brook carefully, being sure not to disturb the darting shadows within. Like ghosts they reside there, camouflaged by the gravel bottom and the gray, worn boulders caught in the brook's flow. Don't cast your shadow on the brook because the inhabitants know it doesn't belong there, in one of the last wild places of Pennsylvania. They have seen shadows far too often—shadows cast by raccoons, birds of prey and perhaps even otters. Shadows spell danger, real or imagined, so you do not come here and let the sun come from behind you.

Skirt the brook where you must, and then take the soft hand of the child beside you and kneel in the streamside cover to watch the water. Don't hurry. Brooks are not made for those in a hurry. Kneel and watch and do not move. Tell the child to watch the stream bottom for things that look out of place.

It will take time for your eyes to gaze past and through the

The Brook

moving waters to scan the bottom. Watch for shadows that dart from beside a boulder, from beneath the fallen limbs of the hardwoods, now trapped in the flow. Watch long and hard and the shadows will in time develop the picture you are looking for. Slowly, ever so slowly, like a developer tray in a darkroom, the shadows will turn into brook trout. They will be trout with spectacular colors—brilliant red fins feathered in contrasting white, bellies of brilliant orange, sides spotted in red with halos of blue, and wormy markings that crawl across their backs.

Show the child the fish. Explain that it is truly a char, but no one refers to it as a char any longer, rather a trout, a brook trout. The state fish, so declared on March 9, 1970, once swam in much larger streams throughout the Commonwealth, streams that now have suffered from encroaching populations and their material needs.

Take the child to the source of the brook, a small seeping spring, perhaps with a flow no more than that of a kitchen faucet. Explain to the child that this trickle is the beginning, however modest, of the stream in the valley and then the rivers that lead to the sea. Explain that the trout living here are like the beggars that frequent street corners, because the brook is not rich in food and trout here struggle to find enough to exist.

Then take the child downstream from the source and find a pool with a never-ending flow, deep enough to hide the shadows that dart within. Together, crawl side by side on your stomachs close enough so the child can simply sling the nightcrawler globbed on the end of a size eight hook to the flow. Lie there side by side on your stomachs until the rod tip dips three times and then have the child set the hook with a sweeping action that will bring the small brook trout onto the bank.

Now line your wicker basket with moss and a few damp ferns and follow the brook down the mountain. Explain to the child as you hop from stone to stone and watch darting shadows scurry before you that the small brookie in the basket is a mature trout, and that this brook simply does not grow large fish.

At home, clean the fish together and then roll it in pancake flour and fry it in a black skillet with butter. Taste the flesh of something as wild as nature herself.

If you do this, you will have taught the child of the brook—the modest beginning of a trout fisheries, the wildness of such places, and why they are so important—and you will have led the youngster to the tradition of fishing. For as we all know, the brook is the cornerstone of trout fishing in the Keystone State, and the beginning of most of our water resources. It is a place of solitude where the child in all of us can retreat when there is a need to be somewhere unhurried and virtually untouched. It is a priceless natural treasure.

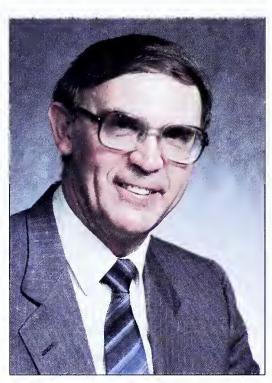






Straight Talk

Trout—No Longer the Only Reward



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

Pennsylvania has historically been recognized as one of the outstanding trout fishing states. Few states offer the wonderful natural coldwater resources that Pennsylvanians have taken for granted for many years. Also, very few states supplement their existing coldwater streams and lakes with adult and fingerling trout on a scale that Pennsylvania's fishermen have grown to expect. Together, these two factors have gained Pennsylvania the reputation as a leader among trout fishing states. Pennsylvania is also a leader in inland state salmon, lake trout and steelhead trout fishing opportunities, with its outstanding program on Lake Erie, our only Great Lakes fishing opportunity.

For some time, the Commission has had a formal recognition program for Biggest Fish of the Year harvested by anglers across the Commonwealth. In 1989, the Pennsylvania waters of Lake Erie produced a 37-inch, 23-pound, 15-ounce chinook salmon; a 35-inch, 13-pound, 6-ounce coho salmon; a 33.5-inch, 15-pound, 14-ounce lake trout; and a 33.75-inch, 13-pound, 12-ounce steelhead trout.

Other Pennsylvania streams and lakes produced a 29.5-inch, 12-pound brown trout; a 28.5-inch, 9-pound, 9-ounce rainbow trout; a 29-inch, 8-pound, 6-ounce palomino trout; and a 23.75-inch, 6-pound, 5-ounce brook trout. There is little question that Pennsylvania's trout and salmon programs continue to hold a high level of respect among anglers.

The Commission recently gave recognition awards to 31 anglers who reported their catches to the Angler Recognition Program. Of the 31 species of fish recognized, only eight were trout and salmon, and 23 were warmwater or coolwater species. They included American shad, muskellunge, sauger, northern pike, crappies, many species of catfish, walleye, largemouth and smallmouth bass, striped, white, and rock bass, bluegill, bowfin, carp, white and yellow perch, chain pickerel, sheepshead and sucker.

Of these 23 species of fish commonly targeted by Pennsylvania anglers, two set new state records. One was a whopper—a 45.5-inch, 53-pound, 13-ounce striped bass caught in the Delaware River on April 11 by Donald Clark of Boothwyn, PA. The other was a 1-pound, 4-ounce white perch caught in Lake Erie by Thomas Kimberly of Pittsburgh. The longest fish reported was a 51-inch muskellunge caught in the Allegheny Reservoir, which also produced a 42.5-inch northern pike.

These statistics give anglers a clear message: Pennsylvania has a unique and widespread fisheries program that few other inland states can match. Anglers of all ages, both male and female, annually record nice-sized catches of many different fish species. Pennsylvania's reputation as a topnotch warmwater/coolwater fishing state has grown rapidly as more and more anglers discover the rewarding opportunities provided by our lakes, rivers and streams.

Trout are no longer an angler's only reward. All Pennsylvania fishermen need to consider broadening their fishing interests to enjoy a variety of available opportunities.

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The covers

Wally Eberhart photographed the crappie on this issue's front cover, and on the back cover, Mel Michaels hefts a nice shad that he caught near Easton. These catches represent the wealth of fishing available each May. Trout, panfish, shad, bass, walleye and just about any other species you want to catch is available now. You can begin to get in on the action by checking out the shad fishing story on page 7. Trout fishermen will want to scan the practical story on page 24 and the food for thought on page 14. To learn the secrets of Pennsylvania's one-of-a-kind waterway, turn to page 18. Carp anglers ought to check out page 11.

STATE LIBRARY OF PENNSYLVANIA DOCUMENTS SECTION

Allegheny River Hydro-Power

by Jeff Knapp

For over half a century the eight locks and dams on the Allegheny River have been in operation, serving commercial and recreational boating needs. Today, in a world constantly searching for more and varied sources of energy, they are receiving the attention of developers for their potential ability to generate electricity.

Hydroelectric power facilities have been proposed for all the locks and dams on Pennsylvania's portion of the Ohio, Monongahela, and Allegheny rivers. In the case of the Allegheny, it is more than just a proposal. Two hydro-power facilities have been built and are on line, one on L & D5 at Schenley, the other upriver on L & D6 near Kelly Station. Two other projects are currently under construction. One is at L & D8 upriver of Mosgrove, the other at L & D9 near Rimer.

Do developers have a free hand to harness our rivers' power for conversion to electrical energy? Will the introduction of hydro-power have an impact, either positive or negative, on the fishery? To answer this last question, I consulted Commission Area Fisheries managers (AFM) Rick Lorson and Ron Lee, who manage the fisheries of the Allegheny River.

AFM Lorson, who manages the river from L & D6 downstream, lists this water as a high-quality walleye and sauger fishery with self-sustaining numbers of both fish. Survey crews sampling the water below the Kelly Station dam recently came up with some fine walleye specimens. Flathead and channel catfish also are there, in both good numbers and size.

Three species of bass—smallmouth, largemouth and spotted—swim in the waters of the lower Allegheny, as do northern pike and muskies. Lorson considers the Allegheny the premier of the area's three major rivers.



AFM Ron Lee, who manages the river north of L & D6, points to the general improvement in water quality over the past several years because of the clean-up of some major tributaries. But he expressed caution over two possible detriments to the river—dredging and hydro-power.

The operation of hydroelectric facilities on the Allegheny could have a negative impact on the fishery. But developers don't have a free, unregulated hand in this regard. Projects of this nature must be licensed by the Federal Energy Regulatory Commission (FERC). As part of this very complicated licensing procedure, appropriate resource agencies voice their environmental concerns. Among these agencies, of course, is the Fish Commission.

Fisheries Biologist Leroy Young is the Commission's representation on matters concerning hydro-power. As such, it's his job to be the Commission delegate in a group of officials of pertinent state and federal agencies who comment on agency interests. This input is taken into consideration when FERC writes the provisions of the license.

Biologist Young explains the Fish Commission's stance on the Allegheny's hydro-power projects. "We try to minimize the detrimental impact and maximize the beneficial aspects as far as the fishery and aquatic life is concerned."

But what detrimental effect could these relatively unobtrusive projects have on 60 plus navigable miles of the Allegheny River? Plenty. Environmental impact must be taken into consideration even in the construction phase, with concerns revolving around erosion, sedimentation, and the provision for recreational access displaced as a result of construction. Once in place, the major worries become water quality, control, fish entrainment and recreational access.

Water quality

Thoughts regarding water quality in most cases can quickly be narrowed down to dissolved oxygen levels. The dams provide the main source of oxygenation for the river. By diverting water through a power plant, you lessen the percentage that gets oxygenated. Young describes the navigable section of the Allegheny as a "hybrid system," lacking the riffles that introduce oxygen to a river or the plant life that produces it in a lake. "The dams," says

Commission policy:
"Hydroelectric development must not adversely affect the existing or potential fisheries at the location of the dam."

Young, "are now, in effect, the river's riffles."

He goes on to illustrate the cumulative effect this could have. "On the Allegheny River you have a series of pools, and aeration occurs at each dam. Between the dams quite a bit of organic loading takes place. The decomposition of this material consumes oxygen.

"The highest dissolved oxygen content is below each dam and it decreases until it reaches the next dam, where it shoots up again. If you decrease the amount of aeration that takes place at each dam, the cumulative effect can be very significant."

To ensure that this does not happen, hydropower operators are required either to maintain sufficient flow over the dam or artificially aerate water passing through the turbine units to preserve dissolved oxygen levels at which the fishery will suffer no negative impacts.

Licensing calls for continuous monitoring of dissolved oxygen levels to be sure this requirement is met. Plans are for future monitoring systems to be tied in to a water quality system for more real-time control. This means that the dissolved oxygen levels in the vicinity of the hydrostation can be determined in a moment from a remote site many miles from the station with the flip of a switch.

Fish entrainment

This problem is actually two-fold. First is the problem of keeping fish out of the facility. Second is the question of the rate of mortality of the ones that do pass through the turbines.

Consideration is given during the construction phase to minimize the velocity of the water entering the plant's intakes, thus lessening the number of fish drawn to it. However, it's still a ticklish situation at best. Because of the physical nature of a tailrace area, conducting reliable surveys to determine impact is tough.

"When a dead fish is found in nets used for sampling during turbine mortality studies, it's difficult to determine if the fish was killed going through the turbines or when it struck the net at a high velocity," explains Young.

Survey results from other hydro-power plants across the nation indicate mortality rates as high as 75 to 80 percent and as low as 10 percent, indicating the variables encountered. These include items such as turbine design, size, and speed of rotation, all of which play a role in the fate of entrained fish.

Modern technology has yet to come up with an efficient method of keeping fish out of the intakes or from getting trapped in the first place. Screens small enough not to allow passage of fish are not practical on a river system that, at times, gets its share of debris in the form of floating logs, leaves, and unfortunately, litter.

The future may be brighter on this issue, though, as biologist Young relates. "A part of the most recent licenses for projects in the Ohio River Basin calls for designing, in consultation with the state and federal resource agencies, a bio-engineering test facility to study this problem and attempt to come up with a solution." Existing hydro-plants have been designed with the hope they can be retrofitted with any new fish-detracting devices.

"Retrofit," understandably, isn't onc of the Fish Commission's favorite terms. The Commission has been attempting to have this done on the dams of the Susquehanna River since 1866 to allow the passage of American shad and other migratory species. But it has not been until the last decade that significant progress has been made there, owing in large part to the inherent difficulties of retrofit design and construction.

Recreational access

In working with the developers of hydro-power, it is not simply a case of trying to eliminate any environmental impact. It also gives the Commission the opportunity, during the design phase, to have improvements in access included. Fishing platforms have been installed at the existing facilities on the Allegheny River. Future projects may include better access for the handicapped, lighting, restrooms and ample parking.



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Continuing research

The impact these hydro-power facilities have will be measured for many years to come. Wetlands, for instance, can be affected as pool levels drop as a result of power generation. The Cogleys Islands area of Pool 6, a unique slough-type environment near Manorville, will be the subject of a study on this concern.

The strong approach and official policy of the Fish Commission is that hydroelectric development "must not adversely affect the existing or potential fisheries at the location of the dam."

Hydro-power is another example of what we call "progress," but it's enlightening to know that agencies such as the Fish Commission are looking out for our watery environment.



For technical assistance, the author thanks Commission Area Fisheries managers Rick Lorson and Ron Lee, and in particular Commission Fisheries Biologist Leroy Young.

Fly Fishing for Shad

by George Smith

The upper reaches of the Delaware River are well-known to Pennsylvania anglers because the river has earned a reputation for harboring giant rainbow and brown trout. From Callicoon to Hancock, and up the East and West branches of the Delaware to the two reservoirs that feed the scenic waterway, the trout have attracted fly fishermen since before the turn of the century.

Things are changing. Now a different breed of fly fishermen can be seen wading near the shoreline casting long rods on the sprawling river. From the Delaware Water Gap north to beyond the Narrowsburg and Zane Grey pools and on up to Hankins and Long Eddy, fly fishermen are beginning to savor angling for a species of Delaware River fish that has not enjoyed the historic popularity of the celebrated trout.

Fly fishing for shad requires adjustment. Take a hard look at the average shad angler's gear and you see a six-foot spinning rod and a reel spooled with six-pound-test monofilament. Obscured in a shirt pocket or creel is a small tackle box filled with fluorescent-colored shad darts. The anglers use the spinning gear and lead jigs to cast far into the river's deep channels that shad use to journey to their ancestral spawning sites.

Fly fishermen do not enjoy the luxury of casting a heavy jig on the end of a line attached to a stiff rod. They must cast the line itself. To compensate for this "disadvantage," fly fishermen have to use special procedures and their knowledge of the shad's behavior to bring the big silver-sided fish into the long boat nets secured in their wading belts.

Weighted lines

The techniques used for fly fishing for shad are not too different from those used for any other bottom-loving river fish. Shad anglers know they have to get the fly down deep quickly and keep it there if they expect a fish to be interested in the offering, so weighted lines are the norm rather than the exception.

Sink-tip lines, WF6S, WF7S and WF8S, are heavy enough to be cast the distance needed to reach the river's currents and channels preferred by the shad. The line is weighted in the forward section only, which makes it easy to pick up off the water, and it has a sinking forward section that drops a fly deep into the channels.

If the river is plagued by high water, or if the pool or run is deep, you might need a special full-sinking line. These lines are cumbersome to use, but they take the fly to the bottom in short order.

Fly rods

Fly rods used for Delaware River shad need to be hefty to cast long distances over big water and to handle fish that can weigh



Streamer called a "shad dart"





George Smith

Connecticut River Streamer

Tie these shad flies on hooks in sizes 4, 6, and 8. Remember to fish these offerings deep.

more than nine pounds. A little seven-foot rod that accommodates four- or five-weight line has no place on the Delaware. Using it only leads to frustration when you can't cast to the sections of river the fish are using for the northward migration, and you will be unable to enjoy much control should an eight-pounder barrel into the heavy currents with a streamer in its mouth.

Rods should be at least eight feet long. Nine-foot or even longer rods offer an added advantage when casting long distances or into a stiff wind.

Reels

Reels should be large enough to hold 100 yards of backing. Shad are not known for long, leaping runs, but they are scrappy fighters and they dash into the heavy current or charge to the other side of the river when hooked. Anglers need to be prepared for this action by loading their fly reels with 20-pound-test backing.

Leaders

Leaders should be short, no more than six or seven feet. A leader this length doesn't belly as readily as a 12-footer when caught by the current. It hugs the bottom where shad are inclined to spend most of their time.

Tippets should be no lighter than 2X, with 3X a wiscr choice. Use a heavier tippet in the eight-pound-test range and the shad will all but ignore your offering. The trick is to use the lightest line possible that won't snap when a hooked shad charges into the current where the weight of the fish and the pull of the river's fast water can combine to break the tippet.

Tapered leaders purchased from tackle shops can be cut back to the appropriate size, or anglers can tie their own. Learning to tie blood knots, which are commonly used to join two pieces of leader material, is not difficult. With a little practice at home, leader-making can become an entertaining way to spend rainy weekend afternoons.

Home-tied leaders can be customized to meet any fishing situation, and anglers should experiment to find a formula that works best for them. To get started on Delaware River shad, tie a .020 butt section 12 inches long to 15 inches of .017 leader. Add 10 inches of .015, 10 inches of .012, 10 inches of .010, and a 15-inch tippet of .009.

The tippet section can be extended beyond 15 inches so you can tie on several flies consecutively without having to make a major adjustment to the leader.

Naturally, you need to have something to tie to the end of your tippet, and fly selection isn't difficult because there is only a handful of true shad flies.



George Smith

Narragansett Bay Streamer

Flies

The elegant Chesapeake Bay streamer is a favorite, with its white wing and silver tinsel wrapped on a white body. So also is the classy Narrangansett Bay streamer, which has gold tinsel spiraling a wolfish gray body and a striking green and white wing.



Ray Straamar George Smith

Chesapeake Bay Streamer

The flashy but delicate Connecticut Bay streamer is also very popular, with blood-red quill wing and tail and slender, sparkling silver body, and vibrant attractor flies referred to as shad darts can be tied in any color or combination of colors, but orange, yellow and chartreuse seem to be the most effective.

Traditionalists will want to use true shad flies. Any loud, brightly colored trout or salmon streamer like the Mickey Finn can be used to catch these fish. Fly fishermen often fuss and take pleasure in special patterns for select species, but the pattern actually doesn't seem to make much of a difference to the shad.

Shad flics tied on size four through eight streamer hooks are most common. If you are tying the flies at home, wrap the hook with lead to help it plummet to the bottom of the river. Be sure to coat the lead with head cement to prevent it from rusting and ruining the fly.

Wading

The clear Delaware River can be treacherous. The currents can be deceptively swift and the pools can be deeper than they appear. Anglers should use caution when wading to avoid slippery rocks and other obstacles that might compromise their safety.

Let wading staffs or long-handled boat nets serve double-duty as wading staffs. Wading chest-deep isn't advisable because shad are big, heavy fish and in the middle of the battle to bring them to net, many anglers have gone in over their neoprenes.

For added safety, wear a Type III vest-like personal flotation device (PFD) over your waders. In an emergency it can save your life.

Fishing strategies

Anglers who have fly fishing experience on moving water have an advantage for Delaware River shad fishing. To catch shad, anglers need to read the water much like they would when fishing a giant river for several different species of gamefish.

Like salmon, shad hold in deep pools and use the channels and rapids to reach their upriver destinations. As they travel farther north, above Stroudsburg and the Delaware Water Gap, they avoid the strongest currents as they begin to grow weary from the long, upriver run from the sea. Cast to the edge of the rapids or the calmer water flanking the fast water where the fish have an easier time.

Like smallmouth bass, shad rest behind boulders and other obstructions that offer refuge from the rapid current. Don't overlook these spots. Pools that form behind islands, where the river splits and then becomes one again, are also an excellent place for shad to seek a respite from the rigors of their lengthy journey.

Where to fish

For fly fishermen, the best shad fishing can be found north to the Delaware Water Gap. South of the Gap the Delaware is generally too deep for wading, but bank fishing is possible if you can find an open spot to cast.

From the Gap north the river becomes easier to wade, and from Port Jervis north to Hancock the Delaware is perfect for wading and fly fishing. There are wide, deep pools in this portion of the

As the shad run progresses and the water warms, the fish that have grown heavy from feasting in the Atlantic Ocean become more concerned with spawning than with getting up the river. This requires anglers to make an adjustment in their fishing techniques, because the majority of the shad no longer have much interest in fighting the rapids. They hold in the pools by day and wait for nightfall so they can begin to spawn.

When in the spawning phase of the migration, the shad remain inactive during the daylight hours. In late afternoon, they begin working into the shallows where they remain active until dark, when the actual spawning begins. Anglers should then concentrate on casting in the shallows until darkness falls.

Afternoon anglers do well when the spawn begins, but die-hard fishermen can get up at dawn and expect to catch fish until about



river, like Narrowsburg and Zane Grey. These pools are difficult to fish effectively with a fly rod, but generally the water is not much deeper than 12 feet.

There are plenty of public access areas north of the Delaware Water Gap that enable anglers to get on the water. From the Gap north along Route 209 there are well-marked access areas at Bushkill, Eshback, Dingman's Ferry and Milford. There is also an access at Matamoras, which can be reached from Route 209. From Matamoras, follow Route 97 north to reach accesses at Lackawaxen (Zane Grey Pool), Narrowsburg (Narrowsburg Pool), Damascus and Callicoon. Drive on Route 191 from Callicoon to reach the Buckingham access area.

The National Park Service (NPS) also has maps of the Delaware. Write to the Superintendent, Upper Delaware Scenic and Recreational River, P.O. Box C, Narrowsburg, NY 12764 for copies. If you are on the river, stop at the NPS offices at Narrowsburg for its two maps of the upper and lower Delaware. Both maps are helpful in selecting a place to wet a line.



Shad **Streamers**

Connecticut River Streamer

Hook: Mustad 3906B

Size: 4, 6, 8 Thread: Red Tail: Red goose **Body:** Silver tinsel Wing: Red goose

Narragansett Bay Streamer

Hook: Mustad 38941

Size: 4, 6, 8 **Thread:** Gray

Tail: Golden pheasant crest **Body:** Dark gray yarn Rib: Gold tinsel

Wing: Green over gray bucktail

Chesapeake Bay Streamer

Hook: Mustad 38941

Size: 4, 6, 8 Thread: White

Tail: Golden pheasant tail

Body: White Rib: Silver tinsel Wing: White bucktail

Shad Dart

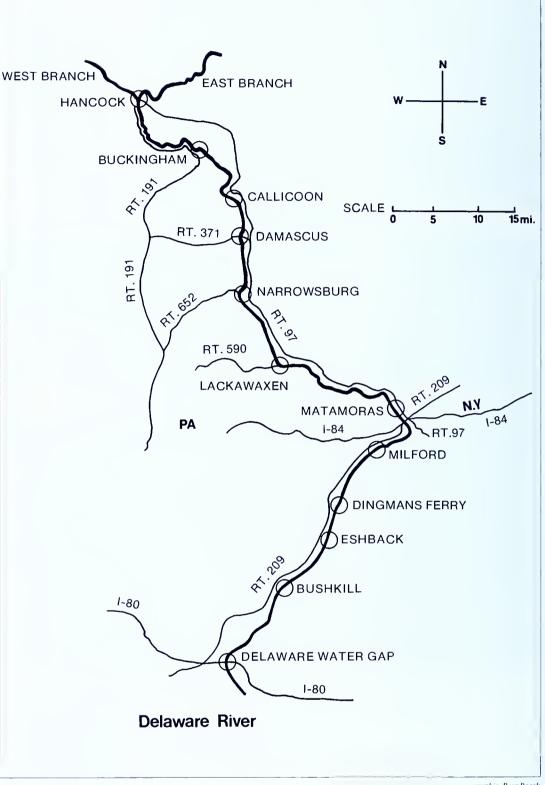
Hook: Mustad 3906B

Size: 4, 6, 8 Thread: Orange Tail: Orange marabou **Body:** Orange floss Rib: Silver tinsel **Head:** Orange chenille

Note: This fly can be tied in white,

red, green, chartreuse, yel-

low, blue or black.



graphic-Rose Boegh

9 a.m., when the shad usually retire to the sanctuary of the deep river pools.

Fighting fish

Fly fishermen are in for a battle when they hook a shad. These fish have an unpredictable strength reserve that often surprises anglers who try to beach them. The portly, powerful shad have soft mouths characteristic of non-predators, and their unexpected lunging can tear flies from their delicate mouths or even break stout tippets.

Boat nets are mandatory. They can be used as a wading staff, or the handle can be inserted inside a wading belt out of the way.

When a hooked fish is brought in close, run it upstream and let the current carry it tail-first into the net. Shad often begin to fight fiercely when they glimpse an angler or net, and this final effort can result in their return to the river.

Pursuing spawning shad with a fly rod is splendid sport, and fly fishermen who cast for these silvery sea-run fish enjoy an opportunity that is available for less than three months of the year. Furthermore, because the fish travel up the same riffles and rapids year after year, season after season, anglers can anticipate the unbelievable suspense of knowing they can in the future return to a lie where they took a fish with a fly rod and expect again to hook a magnificent Delaware River shad.

CHUM FOR SUSQUEHANNA RIVER

CARP

by Art Michaels



Jack Hubley hefts a bronze battler that grabbed a hook baited with corn. The action took place near Middletown. Spring is a terrific time to tempt carp. I like to tangle with bronze bruisers beginning around the last week of April. Carp gather then in the Susquehanna River's quiet pools and creek confluences to feed. The sun warms these river spots in spring before deeper parts of the river heat up, so the carp know to congregate there.

Chumming for carp is especially effective all season long in places with slow currents. I look for pools near confluences with tributaries, areas shielded from the main swift flow by islands, and pools created by low water with no flows or impeded flows.

When I arrive at a fishing spot, I toss in a handful of corn, usually no more than about 20 or 30 whole kernels. I do so repeatedly about every 15 minutes while I fish. The aroma of the meal wafts into the main river's flow. The chum draws fish from surprisingly far away.

I toss the corn where I cast my baited hook. In this way, the carp pick up the baited offering as they mouth pieces of chummed corn.

Successful chumming gives the carp only the hint of a meal. If you toss in too much, they may not find your offering. Toss in too little and they might not be attracted to your fishing spot at all.

Tackle

I set up my tackle after I begin chumming. I use two 6 1/2-foot medium-action glass spinning rods with 10- or 12-pound mono, sometimes 14-pound test. Forget the 6-pound and 8-pound test you might fish with most often. When you latch onto a 20-pound carp, or a bigger one, you'll be glad your reel is spooled with heavy line.

Bottom rigs

I use two different bottom rigs. The first one holds the offering in slow but steady river currents. To make this rig, tie a double surgeon's end loop on the end of your line. Make the loop the diameter of a golf ball. Then tie on a size 4 baitholding hook to the doubled line by way of a Palomar knot. For this purpose, I prefer a hook like an Eagle Claw 181 or a Mustad 92641.

Lately I've also been using wide gap, or Kahle-style hooks, too. I like the sure hooking qualities these kinds of hooks offer, and I think my score on carp with these hooks is higher than it is with baitholding hooks. These hooks include the Mustad 71680 or the Eagle Claw 144. Try them in sizes 1 and 2 and see if they help you raise your score.

About 14 to 18 inches above the hook, make a dropper loop knot, and onto it tie a quarter-ounce or half-ounce bank sinker by way of another Palomar knot.

Carp can be surprisingly smart and shy, so a rig like this with no beads, metal or other hardware works on the biggest, shiest critters.

The other rig is also simple to make. I use it in slower-moving or still water. Thread a half-ounce egg sinker onto your line and then tie a ball-bearing swivel or crane swivel onto the end of the linc. To the other end of the swivel tie on an 18-inch section of 10-pound to 14-pound mono. To this leader tie on a size 4 baitholding hook. Use a Palomar knot or an improved clincher knot to tie the hook onto the leader and to tie the leader to the swivel.

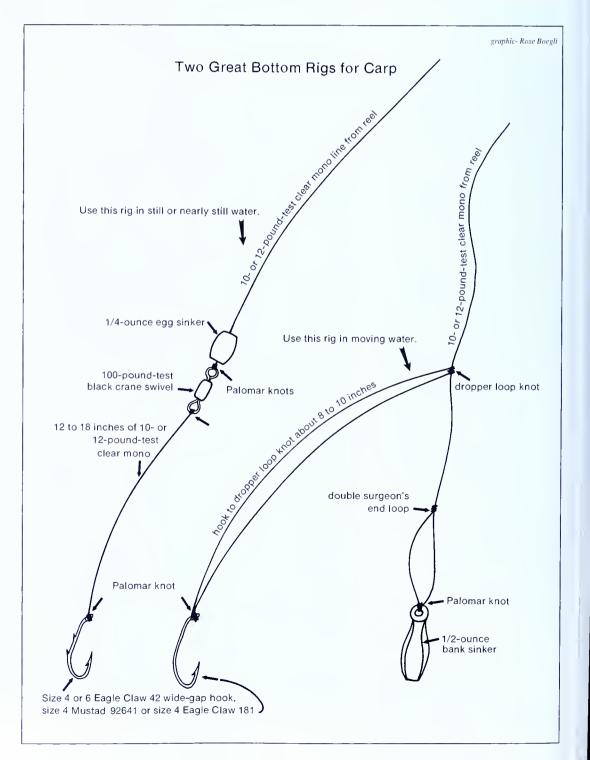
Keep the bail of your reel open when you use this rig.

While you wait for a bite, try slapping the water with your hand. The noise attracts spawning carp. They might be fooled into thinking that your slapping is the sound of spawning carp rolling and splashing.

For both rigs, I cast out and prop up my rod on a stick or on a pile of rocks. This method is common, but when you put the rod down, watch for obstructions that could fray the line. Rocks and twigs could mar the line enough so that when a big carp strikes and the battle begins, the line isn't strong enough to hold.

To prevent damage to your line, be sure your rod is propped up far enough so that the reel is high off the ground.

Make short casts. Corn stays on the hook



better this way. Furthermore, when you toss out corn into a slow-moving current, the fish will congregate surprisingly close to you, right where the corn lands in the water. You don't need long casts.

Strike!

Carp mouth the offering, taking it into their mouths and then spitting it out, perhaps rolling it around in their maws a bit. So when a carp picks up the bait, your rod tip will likely move a little. Don't strike yet. Just get set to strike by picking up the rod.

When the carp takes the bait again and makes off with line, you know he's got your offering in his mouth. That's the time to strike hard!

If you use the first rig, hang on! A carp may drag your rod and reel into the water if you're asleep at the switch.

Because you leave the reel bail open when you use the second rig, strike when you see the line move steadily off the reel. Hold the rod tip low, close the bail and strike hard!

Many carp anglers lose fish because they strike when they feel that first nibble. With both rigs, remember to wait a little to score more.

Stringing whole kernel corn onto a size 4 baitholding hook and getting it to stay there is harder than you might think. Tossing the corn off the hook is easy on every cast if you don't put each kernel on the hook properly. For this reason, I bait up with four or five firm kernels, and I string them onto the hook through the widest, firmest part at the top of each kernel. This also hides the hook point.

Battling behemoths

Carp are remarkable fighters. Pound for pound, they battle just as hard as any largemouth bass, and playing and landing them requires skill. As soon as you set the hook in a big one, expect the fish to turn and make an initial run of about 10 to 20 yards. Be sure your reel drag is set properly for this explosive surge.

Don't horse a hefty one to shore. Let the fish run and bear down on the bottom. Keep the pressure on with a properly adjusted drag. Sooner or later the carp will tire and you can bring it in.

The biggest bronze behemoths battle long and hard. They don't quit tugging easily, so if you let them rest, you prolong the fight unnecessarily and you could give the fish the edge by letting it tangle your line in obstructions.



Use four or five corn kernels to hide the hook and point.

The crucial part of landing a big carp is the moment you bring the fish near the shoreline. In many cases, your hook lodges only in the carp's rubbery lip, so if you try to lift your catch, you could easily lose a gigantic fish.

For this reason, bring a wide-mouthed net. A trout fishing net won't work because it's not big enough.

History

Even though carp can be found just about everywhere, it wasn't always so. Carp are not native to North America, nor to Europe. Carp came originally from Asia—China, to be exact. They were introduced into Europe around the thirteenth century.

In 1877, the U.S. Fish Commission

imported 345 carp from Germany and stocked them in ponds in Baltimore's Druid Hill Park. From this first stocking in American waters came all the carp populations we have today.

This goes to show that carp are prolific spawners, and that they can thrive in waterways that are unsuitable for many other species. It also suggests that generally speaking, carp are underfished.

Keeping carp

If you keep your carp, especially a big fish, don't hold a bruiser at bay with a chain stringer or even a rope strung through the gills. String a carp on a flimsy chain stringer and toss it back in the water, and the monster will regain its strength. The fish can flop around and escape, breaking its jaw and tearing apart its gills, or even opening a stringer's metal clip.

To hold a big one firmly, use rope like clothesline. Thread the rope into the carp's mouth, out one gill, over the carp's head, back through the other gill, and out its mouth. Then knot the end onto the rope. This method holds the carp so that it can't escape.

Some fishermen make faces when it comes to eating carp, but they can be surprisingly tasty. The biggest ones can be filleted and cut into steaks for broiling and baking. Try smoking your carp catch, too.

Whenever you chum for carp, the secret to success is to pick your spots carefully and don't be impatient while chum-

> ming. The chum broadcasts the promise of a meal into the current like radio waves. Carp get your message loud and clear over great distances. Sooner or later they'll arrive on the scene looking for a meal.

You can expect good carp fishing in the river from the end of April into October. Right now the time is right. Those bronze behemoths are ready, willing and able to put up an amazingly strong fight. See you on the river!



Art Michael



There's a story about a young midwestern farm boy who lived during the Great Depression of the 1930s. While walking down a country road one day, he noticed a poster tacked on a telephone pole. The poster advertised a circus that was coming to town in a few weeks.

The young lad marveled at the colorful drawings of lions, tigers, acrobats, clowns and other things that he had only heard about but had never seen. Admission was only \$1. What a thrill to see a circus. It would be the chance of a lifetime.

The boy ran back to the farm and excitedly asked his father if he could have a dollar to buy a circus ticket. His dad felt a deep hurt inside as he told the boy that a dollar wouldn't be forthcoming. It was all the family could do to make ends meet. A dollar? No way. The young boy choked back his tears of disappointment at the news and turned away, hands jammed into the pocket of his faded bib overalls, all the while trying hard to keep his feelings from his dad.

"Son, stop," said the father. "Maybe we can get you to that circus. Let's both try. If you can earn 50 cents, I'll match it. There's gotta be some way I can come up with my share if you can do the same."

If work were a snowflake, then the boy was a blizzard for the next week. He peddled circus posters for a nickel, cleaned the local doctor's garage for a quarter, delivered groceries when the regular delivery boy was ill for 15 cents, and miraculously found the last nickel behind the local bar and pool hall.

Proud of his son's hard work, the father completed his part of the bargain and the precious ticket was purchased.

The day of the circus came and the young lad stood along the street as the bright yellow, red and green wagons rolled by, each containing an animal he'd never before seen. How pretty the women acrobats were. How tall was the man on stilts. How inspiring was the ringmaster with his long moustache, tall black hat, red coat and shiny boots. Bringing up the rear were the clowns, the boy's favorite, all with floppy feet, big red noses, baggy clothes, all designed to make a young boy laugh.

As the clowns came nearer, the boy waved excitedly to them, clutching his precious ticket in his hand. Two or three came close to shake his hand and in the excitement of the moment, the ticket was inadvertently taken by one of the clowns.

After the parade passed, the boy raced as fast as he could for the farm, excitedly describing in great detail to his father what he had just seen. The father listened intently to his son's account of the event and finally said, "Son, you didn't see the circus. You only saw the parade." Are you like that young boy? Do you buy a fishing license and only see the parade? Are you one of those first-day trout fishermen who fishes until noon, maybe catching a limit, maybe not and are never seen again? If you are, you're missing the main event—a whole spring, summer and fall of fishing.

Sure, you can fish for trout after the season begins in April, but there are other things to do. Panfish, namely bluegills and crappies, turn on in both lakes and ponds, public and private. As temperatures warm, smallmouth and largemouth bass fishing gets active in the Susquehanna drainage. Shad and herring begin their runs in the Delaware. In May, rock bass, especially in the Juniata River and some of its larger tributaries, are at their biting best.

Walleye, sauger and saugeye, the latter two in the western rivers, come on in May. In early May, the "biggies," muskies, pike and pickerel, become legal prey for anglers. Stripers and their hybrid cousins are in all year. Try Raystown and Lake Wallenpaupack as your best bet.

June heralds the beginning of largemouth and smallmouth bass fishing on waters other than the Susquehanna. As fall approaches, yellow perch, a year-round favorite, seem to bite better. Wait until after the first couple of frosts hit aquatic vegetation along the shoreline. Lake Erie's good year-round, from downrigger fishing on the big water to small-boat action and wading along the shoreline and bays. Salmon fishing is in year-round, but tributary anglers get their chance as the big fish come closer to shore. Trout stocking begins for the fall and winter season, and with the arrival of cold weather, ice fishing comes into play.

All of this activity requires changes in tackle and techniques. What works for the first day of creeling hatchery-raised trout is not going to do the job on muskies, pike, shad and bass.

There's some great water out there and all kinds of fish waiting from Erie to Kinzua to Raystown. From the Allegheny to the Susquehanna to the Delaware, and from the smallest headwater streams to the biggest river there's something for everyone.

Don't be like the young lad from the Midwest. Don't see the parade and miss the circus.



As you turn the calendar page to May, the changes taking place are some of the most significant of the year. Forests and stream-side vegetation are transformed from dull browns and grays to lush greens, for which we have been so patiently waiting. Shirt-sleeve days, while not frequent at first, are now here and help make a trip to a favorite trout stream a more enjoyable experience.

Trout streams, particularly those in northcentral Pennsylvania, are changing. They spell great opportunities for some of the best fishing of the season. Warming weather causes a rise in water temperature, and activity within a stream's aquatic environment increases. With May water temperatures averaging in the mid-50 degree range, trout are more active than they were in the colder water of April. As the trout's metabolism increases, its food intake requirements increase proportionately. The

abundance of food items available at this time of year meets the trout's need, particularly in streams with ample populations of aquatic insects.

There has been some hatching activity over the past few months, but the hatches of May are some of the best of the year. For the fly angler who enjoys matching the hatch, now is the time to put these skills to work.

Right now, trout streams offer great opportunities for some of the season's best fishing.

Blue Quills, Hendricksons

Under normal conditions, hatches that began the last few days of April continue in earnest through the first week of May. Blue Quills and Hendricksons can now provide some very good fishing on a number of northcentral streams. Little Pine Creek above Little Pine Dam in Lycoming County is one of my favorite streams during May. This stream harbors fair to good populations of both these mayflies, and it is possible to experience some good fishing during these hatches.

The hatchery-reared brown and rainbow trout usually acclimate quickly to their new environment and feed well on the freshly hatched duns as they ride the surface currents. The Blue Quills, small gray-winged reddish-tan-bodied flies, usually begin hatching just before noon with the heaviest hatching lasting a few hours.

By the time the Blue Quill hatch ends, it is time to look for the larger Hendricksons. Unlike many mayflies, the male and female of this species are noticeably different. Actually, the pinkish-tan-bodied female is known as the Hendrickson, and the reddish-brown-bodied males are known as the Red Ouill.

Hendrickson activity usually continues into late afternoon. However, on unusually warm, sunny days, these hatches can occur much earlier in the day and may last only for an hour or so.

In contrast, I've seen Blue Quills hatching in the late afternoon and evening hours on colder, overcast days.

cluding a plump brown in the two-pound class.

March Browns

By the end of the first week of May, one of the season's most well-known hatches appears. The yellowish-tan-bodied March Browns are large mayflies, and although they don't hatch in great numbers, hatching continues sporadically for several hours beginning early in the afternoon. This hatch has been known to entice large trout to feed on the surface. If you are fortunate enough to locate a large fish, stalk it carefully. No trout has ever grown large by being careless.



Dave Rothrock

Trout like this beautiful brookie fall prey to carefully selected flies.

Not long after the last duns have hatched for the day, the Blue Quill and Hendrickson spinners can be seen dancing high above the riffle sections of the stream. Slowly they descend to the surface to deposit their eggs and die. As these spinners drift spent on the surface, trout take up feeding positions and inhale them readily.

Two seasons ago I had experienced some good fishing to hatching Blue Quills and Hendricksons on Pine Creek above the village of Blackwell. Because these mayflies have been active for more than a week already, I knew there would be a better than even chance that good fishing may be in store later in the evening.

As I walked upstream to the next riffle, I focused my attention toward the treetops along the far bank. It wasn't long until I noticed the up-and-down flight patterns characteristic of mayfly spinners. Slowly, these Hendrickson spinners descended to the stream surface. As the number of spinners drifting on the surface increased, so did the number of rising trout. Several more trout came to net that evening, in-

After a few days of hatching activity, March Brown spinners can be found dancing above the riffles. At dusk the spinners begin falling on the water and the trout take advantage of these spent morsels.

Gray Fox

By mid-May, a cousin of the March Brown appears. A bit smaller in size, the Gray Fox exhibits similar hatching characteristics to those of the March Brown. Because these hatches can overlap, observe closely which fly the trout are taking.

Sulphurs

The next hatch to appear is one of my favorites. For me, there is something special about the Sulphurs. By the time this hatch arrives, it is the third week of May. The days are noticeably longer and the weather is summer-like. As often as I can, I assemble my gear as soon as I arrive home from work and off I go. Why waste time eating supper when I can be on Little Pine Creek fishing Sulphurs!

The Sulphur hatch usually gets under way by early evening. As the freshly hatched sulphur-bodied duns ride the surface, they provide a few hours of fine fishing. By this time the rainbows that have managed to elude the angler's creel have taken on vivid colors. I can't help but take a few moments to admire them before releasing them back into the water.

A few days into the hatch, Sulphur spinners appear. The air can be filled with yellowish-brown-bodied spinners carrying large yellow egg sacs. With good numbers of trout rising at dusk, a Sulphur spinner can produce well.

Drakes

By the last week of May, most of us are planning Memorial Day picnics. Many anglers are also planning a trip to fish the Drake hatches. Memorial Day is commonly associated with the time of the famous Green Drakes. This is the most well-known of the Drake hatches, but the lesser known Brown Drake is also active around this time.

There are several northcentral streams where the Green Drake is found. On Pine Creek, particularly above Blackwell, both hatches occur in sufficient numbers to bring trout to the surface. Unfortunately, these are short-lived, lasting two or three days.

The duns hatch sporadically, but the spinner falls can be spectacular at dusk. However, during unusually warm weather, this event may occur in the early morning hours.

Most of the mayfly hatches I've mentioned are found on northcentral streams such as Young Woman's Creek, Kettle Creek, Pine Creek and Little Pine Creek. In the more heavily populated and industrialized south and southeast, the primary mayfly hatch is the hearty Sulphur. Streams such as Little Lehigh Creek, Monocacy Creck and Bushkill Creek have good hatches of Sulphurs.

Caddises

Mayflies seem to receive more attention, but caddis flies are also important. On streams such as Pine Creek, particularly downstream from the village of Blackwell, caddis hatches provide the most consistent action.

The first major caddis to emerge is the cream caddis, and this occurs the first week of May. Local anglers refer to it as the "Cream and Green" because of its cream wings and green body. The trout throw caution to the wind during this hatch because of the incredible number of flies available.

By the second week of May, the tan



Dave Rothrock

caddises begin appearing in good numbers. I've had some fast fishing during this hatch, so much so that I've hooked up to 30 trout without having moved upstream or downstream more than 10 feet from where I began. Small olive and dark-gray caddises can provide some good fishing from now until the end of the month.

In the south and southeast part of the state, caddis flies provide the bulk of hatch activity. Tan, olive and gray caddises seem to be the most abundant during the month of May.

When I plan a fishing trip in May, I like to arrive at the stream a few hours before a hatch begins. I have a good idea of what activity should occur, so I usually start with a nymph that suggests the mayfly I think should be most abundant. Working the nymph deep with a drag-free drift usually accounts for a few trout before the hatch begins.

When the duns begin hatching, I stop for a few minutes to observe the first few fish I see surface-feeding. If I see a few duns disappear in the middle of a rise form, I switch to a dun pattern. If I see trout feeding but the freshly hatched duns drift by without being taken, I know the trout are taking emergers drifting in the surface film. An emerger pattern fished dead-drift in the film usually takes these fish.

I prefer a comparadun or winged tho-

rax dun pattern for trout feeding in slow to medium current. These patterns present a more realistic silhouette. In fast current, the trout do not have as much time to inspect the fly and a high-floating, heavily hackled pattern works well here. Cast the imitation about two feet above the working fish and let it drift naturally downstream.

There are times when I prefer to cast my fly downstream to a rising fish. By casting a slack line and following the drift with my rod, I can achieve a drag-free drift and the fly is the first to enter the trout's field of view.

For fishing during a spinner fall, I prefer a pattern that has a wound hackle wing trimmed top and bottom. This lets the fly float flush in the surface film. The best areas to fish spinner patterns are in the slower water just below the head of a pool and the tail of the pool. The rise to a spinner is usually slow and deliberate because the trout see very little or no movement in this final stage of the mayfly's life.

At the beginning of a caddis hatch, the trout feed primarily on the pupae as they begin their ascent from the stream bottom. A soft-hackle emerging caddis pattern can be effective for this pupal stage. Cast quartering upstream and allow the fly to swing across the current. Most trout take the fly just as it begins to rise and swing below you.

This angler admires a Pine Creek trout before releasing it.

As more trout slash at the adult caddis quickly escaping the surface, an adult pattern can produce some exciting action. Various patterns, from an elk-hair caddis to low-riding hackleless patterns, can be effective. Frequently, a trout can be induced to strike by skittering the adult pattern along the surface to imitate the erratic movements of the freshly hatched adults.

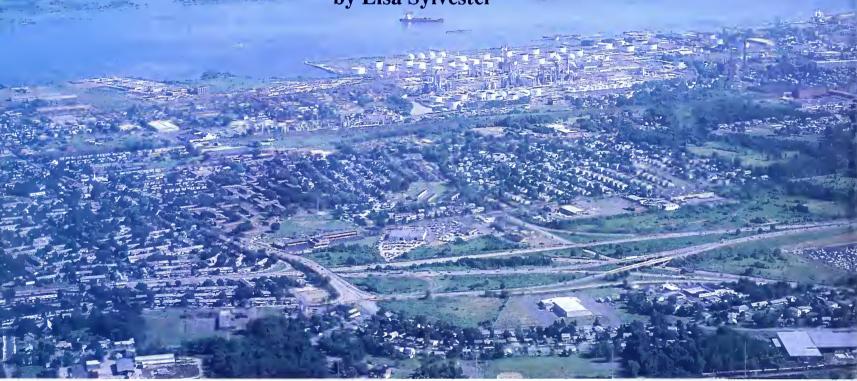
May is filled with opportunities to put fly angling skills to work, but other methods can also be effective. Most of our streams, regardless of their location, contain populations of minnows and other small fish that are a source of forage for trout.

Spinfishing can be quite effective now. Mepps, C.P. Swing and Colorado spinners in the smaller sizes are good choices, along with the smallest Rebels and Rapalas. Blade or lure color is not as important as technique. In faster water, pay particular attention to plunge-pockets and the deeper areas around large rocks and boulders. The heads and tails of pools are also good areas to work. Variations of depth and speed or retrieve can make a difference.

With all of the activity that occurs in May, this could be the most productive time of the year. As I look at the calendar on my wall, I only wish there were more pages labeled "May."

Pennsylvania's Tidal Connection: A Unique Angling Adventure

by Lisa Sylvester



Mike Kaufmann



Top photo, the Delaware Estuary near Marcus Hook. Blue claw crabs (above) are found in Pennsylvania's tidal Delaware River.



Crappie action in the estuary is good in spring and fall.

Don't be surprised to see a fish almost as big as your boat when you're out on the Delaware River's tidal stretch in Pennsylvania. An Atlantic sturgeon 10 feet long was spotted not long ago in this reach of river that comes off the Delaware Bay, from Marcus Hook up to Trenton Falls.

The diversity of part-time ocean-going fish that come through the Delaware Bay and into Pennsylvania waters makes angling in the tidal reach perhaps the most unique in the state.

"These are not the typical fish of a local river system," says Commission area fisheries manager Mike Kaufmann. "One thing that makes the tidal portion of the river interesting is the opportunity to hook a wild striped bass. There is a little extra value to the wild ocean-going fish versus one stocked in an inland lake. Stripers as big as they get can be found in the tidal portion."

Some of the diverse species of fish in Pennsylvania's tidal waters can be found nowhere else in the state, while others frequently journey beyond Trenton Falls. Those species that are unique to the tidal Delaware, according to Kaufmann, include bluefish, smallmouth flounder, bay anchovy, striped mullet, Atlantic croaker, ladyfish (a small relative of tarpon), grey snapper (also called mangrove snapper), Atlantic menhaden, spot, naked goby, hogchoker, inland silversides, and the Atlantic needlefish.

Along with the popular striped bass and the American shad, species known to the tidal waters in Pennsylvania that also travel beyond this area include the Atlantic sturgeon, the short-nosed sturgeon, the blue crab, the blueback herring, the alewife, and the American eel, Kaufmann says.

Among the variety of unusual fish in Pennsylvania's tidal waters, some may not be popular with anglers, but these fish are good for bait, such as the striped mullet. Some are caught commercially for cat food, such as the Atlantic menhaden, also known as bunker. Some even end up in pet shop aquariums, like the hogchoker—a tiny fish of the sole family that looks like a little flounder. The short-nosed sturgeon is on the federal endangered species list and has to be thrown back.

Others are great for meals, including spot, the blue crab, and the striped bass—but not the bay anchovy—although it is in the same family as anchovies used in Caesar salads and on pizzas. Then there are some, like the striped bass, that can be trophies.

Kaufmann says he likes to emphasize the diversity of fish in the tidal reach because "a lot of people still think of this area as having poor water quality and consider it a biological desert. It's important to show the variety we have today. In nature, diversity is an indication of stability."

Cleaning up

Richard Albert, supervisory engineer with the Delaware River Basin Commission, agrees that the Delaware's tidal waters have greatly improved.

"The Delaware estuary, like many rivers and estuaries in the United States, has better water quality today than anytime in this century," Albert wrote in a 1988 paper for the Estuarine Research Federation. This has been primarily due to upgraded or new wastewater treatment facilities constructed in the mid-to-late 1980s.

Albert cites an increase in the Delaware River American shad with an expansion of their spawning area and the upsurge in different fish species as evidence of the water quality improvement.

"During warm months of the year, recreational fishing is now observed at locations where dock workers once experienced nausea from the septic river," he says.

In recent years, the Fish Commission, the Department of Environmental Resources and the Health Department jointly issued a health advisory based on contaminated tissue samples from certain fish in the estuary area.

The advisories are still in effect, but Kaufmann notes that they apply to certain fish in certain areas: White perch caught from the Betsy Ross Bridge in northeast Philadelphia down to the state line, channel catfish caught from Bristol to the state line, and blue crabs caught in the Essington, Delaware County area.

"I recommend to anglers that because catfish are a representative of bottom-feeding fish, the advisory should apply to other bottom feeders as well, such as carp and American eel," Kaufmann said.

Kaufmann also points out that in some cases, in other areas of the Delaware River's tidal waters in Pennsylvania the same type fish tested were uncontaminated.

Many fish of the tidal area travel back and forth from salt water to fresh water for spawning. The American eel, for example, makes an amazing journey of more than 1,000 miles to spawn in the Sargasso Sea, northeast of the West Indies.

Only a small portion of the tidal stretch can be considered brackish, or a combination of salt water and fresh water. Typically, no salinity is detected beyond the mouth of the Schuylkill River in Philadelphia, says Albert. During times of heavy runoff from snow or rain, the salt line gets pushed all the way to the Delaware Memorial Bridge near Wilmington. By the same token, during drier summertime conditions, the salt line can come up between Chester and the Schuylkill, he adds.

Using the tide

While most of the tidal portion of the Delaware River is fresh water, it is the saltwater connection that gives it the diversity of fish species. That saltwater connection also means that the ocean's tide can play a big role in a successful fishing trip there.

"For recreational fishing, anglers who use the tide do better," says Alan Robinson, waterways conservation officer for Delaware County. "They like to fish around high tide, when there is more current, and the fish are more likely to feed."

High tide enables anglers to get boats near some good areas for fish, such as rockpiles, Robinson notes. But there are plenty of hazards that must be considered when fishing in tidal waters, he adds.

"People get stuck all the time on sandbars and mud flats. And there are rock jetties that create problems. At Little Tinicum, for instance, you have to go 500 to 600 yards before you can round the tip of the island, and at extreme low tide you need twice the distance," he says.

If an angler gets stuck, he simply has to be patient and wait, because it takes about seven hours for the tide to come in and about five hours to go out.

"The Delaware River in this area is tidal. In Delaware County it fluctuates seven to eight feet, twice a day," Robinson says.

"The river is progressively less affected by the tide the higher up you go. Above Trenton Falls there is no tidal influence. It is found only in Delaware, Philadelphia and Bucks counties," he adds.

Another boating hazard can be the huge ocean-going vessels that enter the Delaware River.

"There is no other place in Pennsylvania where you'll fish among ocean-going tankers. They go up to the Betsy Ross Bridge in Philadelphia while freighters and barges continue upriver into Bucks

Diversity in the Tidal Connection

For a quick glance at the diversity of fish found in Pennsylvania's tidal waters, here are a few facts:

Alewife. Also referred to as river herring, these have been used in freshwater lakes as a forage fish. They're also abundant in the Great Lakes system.

American eel. This catadromous fish, which spawns in salt water and spends most of its life in fresh water, can be found well above Trenton Falls and in obscure tiny streams. Smaller eels are sometimes used for bait. Commercial fishermen sell the eel primarily to markets overseas. In some Asian and European countries it is considered a delicacy.

American shad. This popular sport fish began spawning in the upper estuary below Trenton by 1987 because of greatly improved water quality in the area.

Atlantic croaker. A popular sport fish in other areas of the country, in Pennsylvania it is found as far up the river as Essington, Delaware County.

Atlantic sturgeon. The same species that supplies caviar can be found in Pennsylvania's tidal waters. A 10-footer was found near Philadelphia. They have been located beyond the tidal area.

Atlantic menhaden. Also known as bunker, this commercial fish is used primarily as cat food or bait. In Pennsylvania it is found only in the tidal stretch.

Atlantic needlefish. This small, skinny fish resembles a miniature barracuda and can be found up to the Schuylkill River in Philadelphia.

Bay anchovy. This small fish is found up as far as Penn's Landing in Philadelphia. While not a table fish, it is in the same family as the anchovies that are used in many American dishes.

Blue crab. Popular for its tasty meat, it is mostly found up to Bristol in Bucks County, but in some instances it has shown up even above the tidal area.

Bluefish. This sport fish can be found in Delaware County up to Essington.

Grey snapper. Also called mangrove snapper. Anglers often travel to the coast of Florida to catch this popular sport fish. It's new to the Delaware River in Pennsylvania, first sighted in 1989 below Essington in Delaware County.

Hogchoker. A member of the sole family, this tiny fish resembles a flounder. It ranges in size from a quarter up to a dollar. It is often sold as an aquarium fish in pet stores.

Ladyfish. Anglers usually throw back this fish, which can be hooked up to the mouth of the Schuylkill River. Ladyfish are related to tarpon.

Naked goby. This tiny fish is found as far up as Philadelphia.

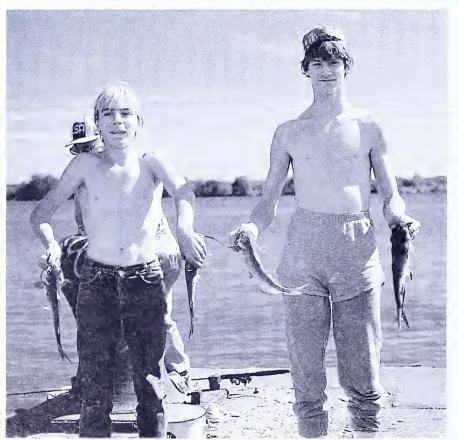
Shortnosed sturgeon. An endangered species, it must be thrown back. It's found in the upper part of the tidal area in Bucks County and beyond.

Smallmouth flounder. A very small fish, it has been found in Philadelphia and Delaware counties, near Essington.

Spot. Found in Pennsylvania waters up to Philadelphia, this popular, tasty sport fish is also caught up and down the East Coast.

Striped bass. In the tidal waters, a common size for the popular sport fish is 12 to 24 inches.

Striped mullet. A typical baitfish, it can also be bought in food stores. It is found up to the mouth of the Schuylkill River.—*LS*



Mike Kaufmann

Pennsylvania's tidal Delaware River, sometimes slightly salty, is a remarkable resource. It's our connection to the sea.

County. Some of the biggest ships in the ocean can be found in the Delaware. Boaters have to watch out for wakes, and they certainly can't get in the way," Kaufmann says.

The heaviest concentration of large-vessel traffic is south of the Bucks County line to the Delaware-Pennsylvania state line.

"Once you cross the shipping channel, you're away from them, but you should always be aware of possible contact with a ship in the channel or near the piers," Kaufmann advises.

Anglers should not be discouraged by the ships, however. Says Kaufmann, "The big stripers are caught away from the channel. Plenty of people fish there."

But you don't have to bring home a trophy to come away from Pennsylvania's tidal waters with an interesting fish story—considering that you could come upon species that range from the naked goby tiny enough to fit in a clam shell to a sturgeon that could rival the size of your boat.

Keystone Lake: Fisheries Habitat Restoration

As a youth, I spent countless hours intensely studying information in fishing magazines. One of the subjects often covered was the techniques of largemouth bass fishing. Frequently the author would relate methods of working flooded brush and timber, prime largemouth bass habitat. This reading was interesting, but I couldn't apply the information. The newly formed lake near my home, Keystone Lake, had none of this woody cover. This reservoir, like many others in Pennsylvania, had been clearcut before filling, leaving it devoid of this type of cover. Some 20 years later, this situation changed.

Today, Keystone Lake offers both fish and fishermen a wide variety of cover. Over the years, aquatic plants such as coontail and water lily have developed and now grow to depths approaching 20 feet because of the very clear lake water.

But this story is about the amount of wood cover now existing. Starting in 1981, a local conservation group, the Crooked Creek Watershed Association (CCWA), in conjunction with the Fish Commission, undertook a project that has led to the placement of over 600 wood structures in this 950acre lake.

History

Keystone Lake is located in Armstrong County. Its five-mile length lies along Route 210, five miles north of Elderton, where Route 210 intersects with U.S. Route 422. It is owned by several electric companies for the purpose of supplying water to Penelec's Keystone Generating Station. Keystone Lake is leased to the Fish Commission.

The Fish Commission manages the lake for such warmwater species as smallmouth and largemouth bass, walleye, muskellunge and panfish. Keystone is reputed to be tough to fish, but yearly it yields trophy specimens. With a maximum depth of 85 feet, the lake blends deep and shallow water.

The idea of placing wood cover in Keystone Lake was born at a group meeting of the CCWA in 1981. The group contacted Jim Smith, who at the time was by Jeff Knapp



the waterways conservation officer for Armstrong County. He coordinated the initial paperwork and helped obtain the necessary permissions. Smith is now stationed in Harrisburg where he is an assistant to the director, Bureau of Law Enforcement.

Merle Webster, president of the CCWA, explained to me the types of cover the group introduced and the process that got them

Since the beginning of the project, various agencies and groups, in addition to the Fish Commission, have aided the CCWA. This includes the Pennsylvania Game Commission, the Bureau of Forestry, PA Conservation Corps Workers (via Armstrong County) and the Boy Scouts.

The idea of placing wood structures in the lake was born in 1981. Since then, over 600 fish-attracting structures have been placed in the lake.

Two kinds of wood structures have been placed in the lake. The first is described as a brush pile. This consists of several pine trees lashed together and anchored with cement blocks. They are constructed and placed during the winter, when there is safe ice on the lake. That way the piles can be located over strategic lake spots. With the spring thaw, the piles sink into position. This cover is generally placed in water 12 feet deep or less, in areas approved by Penelec and the Fish Commission, the layer of the lake known as the littoral zone.

The second form of cover comes from cutting non-mercantile shoreline trees and dropping them in the lake. The trunks are then cabled to the stumps. The trees that are used are ones that would eventually fall in the lake, anyway. This determination is made by Bureau of Forestry personnel.

Objectives

Dave Houser is chief of the Commission Adopt-a-Stream program. This is the section of the Fish Commission a group or individual works with when embarking on a habitat improvement project on a waterway. Houser was involved with the planning of the Keystone Lake project.

According to Houser, the bottom of Keystone Lake was a "desert-like environment." This was caused by the clear-cutting of all wood vegetation before the lake's filling. Without any cover to relate to, fish can be difficult to locate consistently. Hence, the name of the newly introduced cover— "fish-attracting structure" and "crappie condos."

The primary goal of the cover was to bring fish and fishermen together. For instance, shallow brush piles attract crappies in the spring and largemouth bass for most of the year, or a large hardwood tree was downed on a sharp drop-off, which small mouth bass find to their liking.

Larger fish populations

Bringing anglers and fish together is the number one goal, but Houser doesn't rule out the possibility that such structures can increase the numbers of fish. This depends on the specific characteristics of the waterway. A species that may proliferate in Keystone Lake, as a result of the additional cover, may not be so affected in another lake.

An example of this at Keystone is the crappie fishery. I've fished this lake since it was formed, but until the wood cover was introduced, most crappie catches were coincidental. I didn't fish for them, and I was unaware of a strong crappie population.

However, since the brush piles were introduced the spring crappie fishing is quite good. Obviously, the fish didn't magically materialize overnight. The brush piles did their job and brought the fish and fishermen together, at least in the spring. Whether or not the habitat will increase the number of crappies is not yet known.

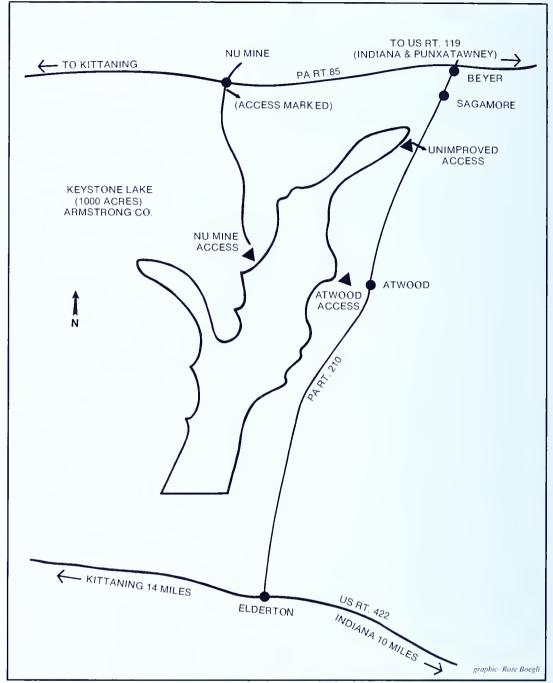
Conservation concern

The brush piles certainly do collect plenty of crappies as the water warms and the fish prepare to spawn, but it also makes them vulnerable and subject to over-harvest. In the past few years, I've seen the average size fish drop about two inches and the number of 12-inch or better specimens taper off. Wise anglers should consider keeping a few average-sized fish for the table and releasing the large females to help maintain a healthy fishery for the future.

CCWA President Mcrle Webster remembered how the different species of fish have responded to the cover. He talked with Army Corps of Engineers scuba divers who had observed the structures underwater. As the divers probed the trunks and branches with their lights, they saw what they described as "Christmas trees." The reflections of baitfish and gamefish swarms gave off the appearance of holiday ornaments and lights. That description fits because the trees lashed together to form the piles were cut from old Christmas tree plantings on the lake's shore.

Webster also recalled observing an ice fisherman pulling a 30-inch walleye through

The new habitat has made a tough-to-fish lake easier for most anglers.



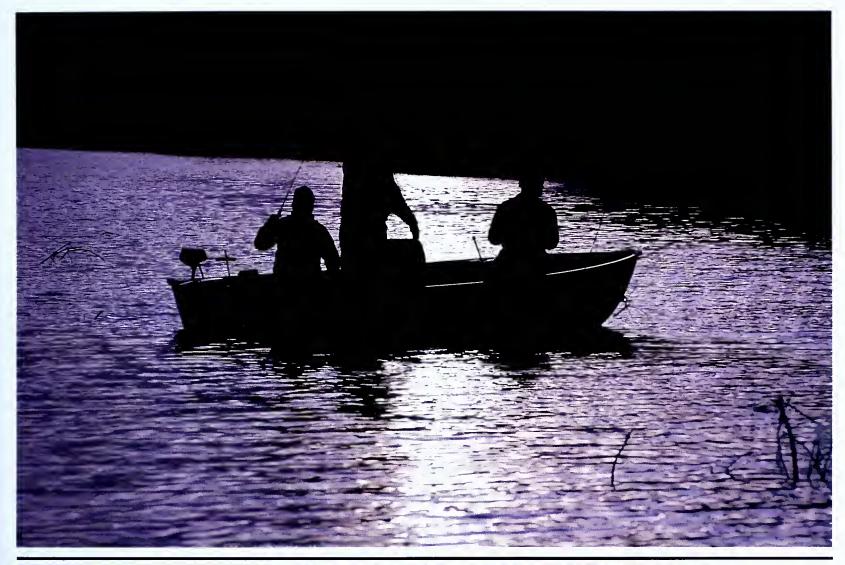
the ice during one of their "work days." This fish was taken from the top of some submerged wood structure.

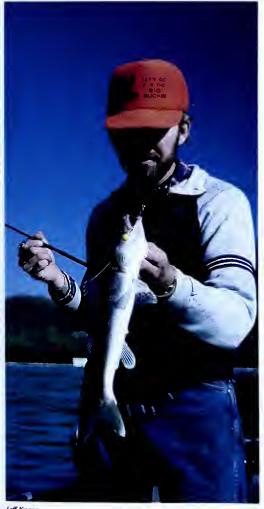
The habitat has made a "tough-to-fish" lake easier for most anglers. Actually, several different fishing challenges have been created. Brush piles and downed trees in shallow water have created a shallow-water fishery. Completely submerged cover on dropoffs, points and flats concentrates fish using these areas. Anglers can pick from a variety of lures and presentations to work the various spots.

The CCWA publishes an excellent lake hydrographic map that shows the locations of the cover. It's available at local tackle shops, or by writing to the Crooked Creek Watershed Association, P.O. Box 446, Ford City, PA 16226. Don't forget to use the map with a sonar unit to locate submerged cover. These are frequented by fewer people, and can be more productive.



Ieff Knapp









Keystone Lake, 950 acres and about five miles long, is located in Armstrong County, about 40 miles northeast of Pittsburgh. The main quarries are smallmouth and largemouth bass, walleye, muskies and panfish.



Jeff Knapp

ANGLERS ON THE TURKEY

Mention trout fishing in Pennsylvania and the two images that most often arise are the legendary limestone streams in the central part of the state and the wild mountain waters of the northern tier. But the demands of the limestoners make them fun for a relatively small number of anglers. And not very many people live in the northern mountains. To fish Kettle Creek, the Loyalsock, Fishing Creek and the others means traveling 150 miles or more for the majority of the state's trout fishermen.

Southwestern Pennsylvania, on the other hand, is the second largest metropolitan area in the state, and the place where the most fishing licenses are sold. But as point guard for the Industrial Revolution, it also is a land that has been horribly abused since the days of steel magnate Andrew Carnegie and coal baron Henry Clay Frick.

To talk of good trout fishing in the state's southwest corner is to draw condescending smiles from anglers who live in other areas. And the region certainly does have more than its share of streams lined with orange rocks from acid mine drainage and carrying water that desperately needs improved sewage treatment. But it also has the Laurel Highlands.

Like the better known Poconos to the northeast, the Laurel Highlands come without a distinct boundary. The generally accepted limits are the Mason-Dixon Line in the south, Route 22 in the north, Route 119 in the west, and Route 220 to the east. The heart of the region for the trout fisherman, though, is southern Somerset County and the land surrounding Laurel Hill.

"The rapids occur where bedrock is the hardest," writes Tim Palmer of Laurel Hill in his book *Youghiogheny: Appalachian River*, "and they go back to the mountain's birth, 300 million years ago. These are old mountains. In comparison, the St. Elias Range of Alaska is only 20 million years old. Geologists say that this land was south of the equator. As the continent drifted north, mountains buckled for 50 million years while the river...continued to cut its path. Geologists estimate that 200 million years ago the Appalachians reared as tall as today's Alps, but three-quarters of the original rock has worn away..."

The Yough

The Youghiogheny River, the "middle Yough," between the dam at Confluence and the whitewater mecca of Ohiopyle, is probably the best known of the Laurel Highlands trout waters. The coldwater release from the Youghiogheny Reservoir is responsible for nearly 30 miles of tailwater trout fishing. It has even received national publicity, dubbed "the Madison of the East."

But that is pushing things a bit. The Yough can match the Madison on certain days, but it is far more dark and moody than that famed western river. An angler can visit it one day, catch and release 25 trout within a few hours, and then return the following day, and even though the weather and water are exactly the same, fail to raise a single fish. Nobody I know has figured it out, but everybody keeps going back.

The Yough also comes without the dependable hatches found on the Madison. It is essentially a caddis river, but a good caddis river. Shake a bush along its banks and a mini-blizzard of the insects is likely to occur, most of which can be quite nicely TURKEY
FOOT by
Mike Sajna



Mike Sajni

matched by impressionistic patterns such as the Elk Hair and Henryville Special, as well as the old reliable Adams in size 16.

Mayflies—Blue Duns, Sulphurs, Light Cahills, Blue-winged Olives, Slate Drakes and Blue Quills—are found in the Yough, too, but their appearance is often sporadic. Stoneflies and crayfish are other aquatic creatures that occur in numbers and are good choices to tempt some of the river's bigger trout.

The Yough's hatches and temperament may not be as reliable or congenial as the Madison's, but one area in which it does compare favorably is wild trout. Only about the first mile of the river below Confluence is stocked by the Fish Commission with adult fish. The remaining 10 miles have been heavily planted with fingerlings, 100,000 or more a year since 1973. It now holds tens of





Mike Sair

thousands of browns and rainbows that have grown up doing a survival-of-the-fittest dance. They range in size from under six inches to well over 20 inches, with the average 12 to 14 inches, a size that has been steadily increasing.

Another area in which the Yough matches the Madison is scenery. The views, while not the big sky of Montana, are packed with majestic mountains rising 1,600 feet

almost straight up from the water and crowned by lush forests. The gap the river cuts through Laurel Hill is nothing less than awe-inspiring. And road access is limited to just the first couple of miles below Confluence. The remaining nine miles to Ohiopyle are reachable only off a bike path or by canoe, both of which can be rented from the rafting outfitters in Ohiopyle and a few places in Confluence. An added bonus is that trout fishing in the river is open year-round.

"Turkey Foot"

A century or two before the Laurel Highlands were christened as such, Confluence was known as "Turkey Foot." Christopher Gist, one of the region's first settlers and a friend of George Washington, came up with the name when he visited the site in 1751 and thought the junction of the Yough, Laurel Hill Creek and the Casselman River resembled the footprint of a wild turkey.

Laurel Hill Creek

Of the two other toes on the turkey foot, Laurel Hill Creek is by far the better trout stream. One friend even claims it is better than any of the streams he has fished in New York's fabled Catskills. I cannot vouch for that statement, but I can say that Laurel Hill is an amazingly diverse trout stream, a place where an angler can find everything from quiet little corners to wide open spaces, with all shades of isolation and accessibility in between, and water types from fast runs and deep pools to rocky pockets and shallow flats.

Arising out of the steep woodlands along the Turnpike between Donegal and Somerset, Laurel Hill Creek parallels its namesake mountain flowing southwest along the Westmoreland/Somerset County line for some 30 miles. Its trout water—with brookies,



rainbows and browns—extends from above Route 31 near Bakersville to Confluence, a distance of roughly 25 miles. Its open and shallow lower reaches warm quickly, so they are somewhat marginal for trout, but they also contain some larger trout stocked by merchants from nearby Confluence, as well as stream-bred smallmouth bass and northern pike.

Except in a few sections, Laurel Hill, like the Yough, lacks predictable and abundant hatches. But sporadic hatches also mean that the trout can't afford to be too picky, and combined with a heavy stocking schedule, this often makes for some tremendous fishing.

The Adams, Renegade, Elk Hair Caddis, Royal Coachman, soft-hackle flies, Hare's Ear and other impressionistic or attractor patterns in sizes 14 and smaller all work well, as do larger stone fly nymphs, terrestrials, midges and small spinners. Bug-chasers can keep an eye out, too, for Hendricksons, March Browns, Brown Drakes, Sulphurs and Light Cahills.

Special-reg area

Near the upper end of Laurel Hill's trout water lies Laurel Hill State Park and a 2.2-mile delayed-harvest, artificial-lures-only project. Along with its regular supply of trout from the Fish Commission, the special regulation water is stocked with trophy fish by the Somerset County Fly Fishers Club. The club also maintains the delayed-harvest stretch in the Commission's Adopt-a-Stream program. The water in the project is a microcosm of the stream as a whole, running from mud-banked flats to swift runs, and rocky pools to small pockets. For anglers who prefer still water, the park has a 65-acre lake.

Fishermen who enjoy covered bridges should bring their cameras when they fish Laurel Hill. The old bridges appear at Barron-

vale, along Route 653 west near Scottyland Trailer Park and downstream of Humbert.

Casselman River

Acid mine drainage, the bane of southwestern Pennsylvania, makes the Casselman the least productive toe of the turkey foot. Out of its 53 miles, only a 5.6-mile stretch from the Maryland line to Boynton is stocked with trout. And that has only been since the mid-1980s, after cleanup efforts by the Casselman Watershed Association, the Department of Environmental Resources and other groups. Fishing in the stocked portion of the river, however, is "fine," according to Rick Lorson, area fisheries manager for this area.

The Casselman's trout water lies across Mount Davis from the Yough and Laurel Hill Creek. But four of the river's tributaries, White's Creek, McClintock Run, Middle Creek and Glade Run, are near those other two streams and offer another 18 miles or so of trout fishing in a small, mountain stream setting.

White Creek's stocked water begins around Dumas and can be found by taking Route 523 to Listonburg and then turning onto SR 3004, which parallels the stream. McClintock Run may be reached by taking Route 281 to Paddytown where SR 3001 appears leading to Fort Hill. After the road crosses the Casselman, bear left up the mountain and continue to Fort Union where the Union Church leads to the lower stream.

Mount Davis is actually part of Negro Mountain, which extends into Maryland. At 3,213 feet, it is the highest point in Pennsylvania. The name *Davis* is derived from an early settler. Negro Mountain takes its name from a black pioneer who sacrificed his life to hold off an attacking party of Indians while his companions escaped.

As part of Negro Mountain, Mount Davis does not offer much of a view, except from the observation tower. Most of the land around it is nearly the same height, but it does have some fascinating stories attached to it, especially that of the Wild Child and the Baughmans.

Lydia Shultz was 10 years old in the spring of 1830 when she was sent out to bring home the cows and became lost. A search by her family and neighbors turned up nothing. Gradually, the family accepted the fact that she was dead. Months passed with no hint she might still be alive. Then one day a neighbor found her in the woods. She had turned wild, living on nuts and berries and anything else she came across, and even took to hiding when people appeared.

Baughman's Rocks take that name from a possible murder victim who was believed hidden among them. Henry Baughman was an ill-tempered man who was out looking for cattle with his two sons one day in the last century. While in the woods, he became angry with August, his youngest boy, and struck him with a stick. August fell unconscious and Henry, thinking he was dead, placed his body in some nearby rocks. When he returned later, however, the body was gone. Henry was found guilty of murder and sentenced to prison, but what happened to August remains a mystery.

Wills Creek, Brush Creek

East of Mount Davis, across the Allegheny Mountain from the Casselman, flows Wills Creek and its tributary Brush Creek and over 20 more miles of trout water.

Wills Creek is one of the wildest trout streams in Pennsylvania. Flowing out of State Game Lands 82 near Callimont, it drops some 1,700 feet from its source to its junction with Little Wills

Creek in Hyndman. That fall, from 2,640 and 900 feet, makes it a brawling collection of riffles, rapids, boulders and pocketwater only occasionally punctuated by small pools where the stream plunges over a rock ledge. It means, too, that Wills Creek has cut into the Allegheny Plateau off which it drops, leaving some ruggedly picturesque cliffs.

Besides cliffs and character. Wills Creek is separated from the other streams in the region by the destination of its water. The Yough, Casselman, Laurel Hill and the rest all drain into the Monongahela and eventually the Gulf of Mexico. Wills Creek, though, turns south, emptying into the Potomac and finally Chesapeake Bay. Its trout water runs from Hyndman on Route 96 in Bedford County upstream through Fairhope to about Mance.

Brush Creek enters Wills Creek above Fairhope. It flows through a wild and wooded gorge touched by a single road and decorated with falls, hemlock and rhododendron. About three miles upstream from Fairhope also holds a covered bridge with a 10-foot high falls underneath it. Fly patterns mentioned for the other streams are generally sufficient for Wills Creek and Brush Creek.

Laurel Run is another tributary of Wills Creek. Its upper section offers wilderness brook trout fishing, and the lower portion provides a combination of wild brook trout and stocked brook trout.

To preserve the Laurel Highlands from the over-development that afflicts other areas, the Western Pennsylvania Conservancy has been striving to keep lands in the public domain. In 1988, it was able to save over 1,800 acres, but still needs more than 8,000 acres to complete its goals for additions to state forests, parks and game lands in the region. Help is always needed. Contact: Western Pennsylvania Conservancy, 316 Fourth Avenue, Pittsburgh, PA 15222. Phone: (412) 288-2777.

The Conservancy is also a member of the Laurel Ridge Forum, organized in 1988. The Forum is comprised of representatives of several public and private groups involved with the Laurel Highlands. The purpose of the Laurel Ridge Forum is to address the problems of and formulate solutions to overdevelopment on the ridge.

Having suffered so much for so long at the hands of industry, southwestern Pennsylvania may not be a trout fishing shrine, but it has more to offer than many people think.

Accommodations

Practically every type of accommodation imaginable is available to anglers visiting the Laurel Highlands. Fortunately, however, most of them are still limited to major roads, especially Route 31 in the north and Route 40 in the south. Towns such as Ohiopyle and Confluence also hold amenities, mostly of the mom-and-pop variety.

The large number of accommodations makes it impossible to list everything. The best course of action would be to contact the Laurel Highlands Tourist Bureau. It can provide information on hotels, campgrounds and restaurants, as well as bike, canoe and guide information. Write or call: The Laurel Highlands, 120 East Main Street, Ligonier, PA 15658. Phone: (412) 238-5661.

Along with private facilities, camping is available at Kooser State Park, Laurel Hill State Park and Ohiopyle State Park. The tourist bureau also can supply information on those spots.



Canaries and Trout— What's the Connection?

When deep coal mining was a big business in Pennsylvania, caged canaries were carried into each mine to test the air. If the canaries lived, the air was safe to breathe. The miners knew they could go into the mine. A dead canary meant there was trouble ahead.

The reason canaries were used is that birds are good environmental fortune tellers. Because they are smaller and their body metabolism (speed) is faster than humans, they are affected more quickly than people.

Trout are good indicators of the health of some of our waterways. They are sensitive to pollutants that enter the water in small quantities.

Trout are the "canaries" of our coldwater streams and deeper lakes. If biologists find trout in good numbers or populations, it is an indication of good water quality. When trout begin to disappear, there's something wrong. Today the major culprit to a healthy trout population in Pennsylvania is acid rain. Oddly enough, it's caused by coal, the product of mines where the canary was used long ago.

Coal is valuable and necessary. It's used to heat our homes and provide electricity. Its byproducts are used in road and driveway paving. Coal is also used in making chemicals for some medicines, perfumes, photographic developing and farming products.

The problem comes when coal is burned improperly. Fossil fuels like coal, oil and gas contain large amounts of sulfur and nitrogen. When coal is burned, the sulfur and nitrogen combine with water in the atmosphere far above the earth. Sulfuric acid and nitric acid are the results. Rain, snow, sleet, hail, fog, dew and frost then become more acidic when they touch the earth.

- The term used to measure acidity is pH. Normal pH is 7. This means there is little acidity present. As the numbers drop toward 0, acidity increases. Rainbow trout need a pH of 6.0 or higher, brown trout, 5.5 or higher and brook trout, 5.0 or higher.



If large amounts of nitrogen and sulfur enter the atmosphere, the acidity of the rain increases. Pennsylvania's rainfall on many days is below 5.0, the pH needed for even a brook trout to survive. The only saving factor in many streams is that the surrounding soil neutralizes, or buffers, the acid, which raises the pH. It's like taking an Alka-Seltzer when you have a sour stomach.

Many soils and the streams that drain the soils have no or little buffering, or Alka-Seltzer, capacity. As the rains continue year after year, the pH in the streams becomes lower and lower. Trout populations become smaller and disappear. The "canaries" are gone.

Today, there is a lot of controversy over acid rain. The Fish Commission, through the work of our biologists, has proved that the pH in many streams is dropping. We think acid rain is the culprit. Industry says there are other causes and further studies should be made. Legislators, scientists, states, nations and ordinary citizens disagree. Some don't even care.

Pennsylvania's water canaries, the trout, have shown that pH is dropping in many areas, yet the debate goes on.

Isn't it odd that our country can send manned space travelers on journeys of millions of miles; develop amazing computer systems; invent wonderful, lifesaving drugs; make medical equipment that can perform what once were thought to be miracles; and yet, we can't stop acid rain? Rain that if it continues could threaten the natural world, the world that keeps us alive.

Canaries and trout—they do have something in common!

Anglers Currents

Commitment and Dedication

Each year, as part of the six regional cooperative nursery seminars, we have the pleasure of recognizing sponsoring organizations for their longevity in the program and their dedication and commitment to rearing fish.

The following clubs were recognized for their accomplishment.

Sponsor	County	Sponsor	County
5 Years of Service Bellwood Sportsmen's Assoc., Inc. Patton Trout Nursery Club Shannock Valley Sportsmen	Blair Cambria Armstrong	20 Years of Service Dauphin County Anglers and Conservationists Erdman Sportsmen's Association	Dauphin
Stoyers Dam Committee 10 Years of Service	Schuylkill	Northumberland Fulton County Sportsmen's League Greencastle Sportsmen's Assoc.	Fulton Franklin
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15 Years of Service Chester Valley Sportsmen's Assoc. Community Rod & Gun Club Fiddlers Run Sportsmen's Assoc. Frankstown Township Sportsmen Island Run Sportsmen IWLA Berks County Chapter Kennells Mills Sportsmen	Chester Susquehanna Northumberland Blair Elk Berks Somerset	25 Years of Service Chambersburg Rod & Gun Club Delco Trout Coop IWLA, Oil City Chapter Marienville Sportsmen's Club 30 Years of Service Potter County Anglers Club	Franklin Delaware Venango Jefferson Potter
Lavelle Fish & Game McSherrystown Fish & Game Protective Association New Baltimore Sportsmen	Schuylkill Adams Somerset	35 Years of Service Heath Township Sportsmen's Club Springside Sportsmen's Club	Jefferson Lehigh
Pine Grove Sportsmen's Club Robesonia Fish & Game Assoc.	Jefferson Berks	40 Years Daniel Boone Rod & Gun Club	Berks

Employee Recognition

Congratulations to the following Fish Commission employees who in 1990 have served the Commission continually from

25 to 34 years. Employees with 35 years or more of continuous service were recognized in the January 1990 *Angler*.

Marguerite C. Davidson
32 Years of Service
Robert T. Rossman
William C. Kennedy
Raymond L. Hoover
Jeanne A. Benner

34 Years of Service

31 Years of ServiceRobert V. Peese Edward R. Miller Bernard D. Ambrose

30 Years of Service
John L. Strouse
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26 Years of Service
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Stanley G. Hastings
Delano R. Graff
Thomas L. Clark

25 Years of Service
Ray Stichler
Dennis L. Martin
lral T. Feighner
H. P. Duvall
Ronald L. Bixler
James R. Beatty
Michael Badner
James C. Anthony
•

ANGLERS CURRENTS

Kudos from 3CU

The 3CU Trout Association compliments Charlic Mann and his staff at the Tionesta Fish Culture Station for the excellent job of providing steelhead eggs for our project over the past six years. These boys really know how to clean up shipments! Ten or so dead eggs out of about 150,000 is all we usually find in a shipment. Makes our job a lot easier to manage.—Bob Hetz, Nursery Manager, 3CU Trout Association, Erie

Your Boat Must Have a Capacity Plate

Since January 1, 1990, every monohull boat less than 20 feet long must display a capacity plate when operating on Commonwealth waterways. Canoes, kayaks, sailboats, inflatables and boats of unusual or unique design are exempt.

Applications for capacity plates can be obtained by writing to: Bureau of Boating, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

If your boat already has a capacity plate placed by the manufacturer, a Fish Commission capacity plate is not required.

PENNSYLVANIA COMMISSION

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities

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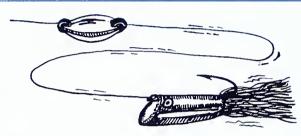
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Angler's Notebook by C. Boyd Pfeiffer



To get darts deep when shad fishing, use two darts with the second dart on a tandem dropper leader, or use a rubber core sinker. A rubber core sinker makes it easy to remove and adjust the weight as the fishing or current changes.

Very thin mctal jigging spoons or structure spoons tend to flutter more and drop over a wider area than thicker metal jigging spoons. As a result, the thinner spoons are often best for locating fish and attracting fish in the summer. The thick spoons are best for fishing a tight area or for fishing cold water, when fish are less likely to chase a bait.

When fly fishing for pike or toothy fish, use a heavy mono section about 12 inches long at the end of the leader. For small fish, 30-pound test is OK, and 50 is best for large fish, but adjust as needed. To provide the most action to the fly, use a loop knot like the Homer Rhodes knot. Knots that cinch up to the eye of the hook destroy any action.

Scparate Lake Erie trolling lures by type and color and then by size. Color is most important and separate color categories allow easy instant lure changes on downriggers.

Fish scents are good, but don't soak worms or other soft lures in them too long. Soaking for a few hours is generally OK. Prolonged soaking for days may damage and "melt" the worms.

Use spinning tackle appropriate to the size of your hand. For women, children and those with small hands, make sure that you can reach the lip of the spool to pick up line when holding the tackle. If this is not possible, go to a smaller size reel, one with a shorter shaft, or one with an automatic pick-up arm that opens the bail.

Hold spinning reels between those fingers where it is most comfortable. For most, this is with the shaft between the middle and ring fingers. For those with small hands, it might be better with three fingers in front of the shaft. Those with large hands might prefer one finger in front. The secret is to make sure that your index finger drops down even with the forward lip of the spool.

When casting a spinning outfit, make sure that you hold the line on the ball of your index finger, not the groove of the first joint. The result will be a smoother release and smoother cast.

When casting with baitcasting tackle, let your thumb ride in the corner formed by the crossbar and the left side plate (right side plate if you cast left-handed). This makes it easier to let the thumb ride up and down on the line to control the cast and prevent backlashes.

To feather (control distance) when casting with spincast tackle, hold your left hand in front of the nose cone when casting and allow the line to run through a loop formed by your index finger and thumb. This allows instant control and slowing of the line as required.

illustration- Rose Boeali

On the Water

with Dave Wolf

It has been a long and trying spring. As usual, trout season created a lot of commotion around here—phones ringing constantly, one inquiry after another, speaking engagements and various other duties to perform. In a word, it is hectic. I am not complaining, but my mind and body are, and I feel like I need to find Ponce de Leon's fountain of youth. I am fortunate, however, because I know of a place with its own magical powers, one that tranquilizes the mind and soothes the soul.

The river lies on the city limits, with busy highways paralleling and spanning its flow. But once I'm on the river, waist-deep in the waters, the traffic fades from sight and mind. The rhythm of casting the long rod takes the tension from my shoulders. The struggle of a fat and sassy smallmouth bass tethered to my leader takes me even further from the reality of day-to-day living.

The escape is not never-ending, nor is it meant to be. Call it reprieve, if you like, for it is time grasped in bits and pieces, precious time that I would trade for no other, time to take that deep breath and get myself and my priorities back on track.

I had been checking the National Weather Services's river forecast for weeks, waiting for the river to fall below four feet at Harrisburg. It seemed as if it would never drop, but finally the recorded message told me that the river and I had a date.

Dressing quickly from the trunk of the car, I donned my waders and vest. I didn't string the rod. It would have to wait until I was riverside. The river's call was far too strong, somewhat akin to my first prom date.

Once along the banks, however, I did pause and gaze across the flow. The boulders and small grass islands were visible above the waters, where ducks, geese and herons frequented and bass wait for passing morsels of food. I knotted the popper onto the 10-pound-test tippet and felt my way across the boulder-strewn bottom.

Wading is not for the careless, especially at this time of the year. A fall could be disastrous because currents are still strong and the large boulders could cause serious injury. I have one bad elbow now, from falling a few years ago on a large gray boulder, elbow-first. I need no additional lessons.

I continued to wade because it brought me closer to the elements. I was eye level to leaping bass and could cover the water more thoroughly—a step and a cast at a time.

On that night the river was kind, giving up bass readily. They came as a black bear from hibernation to my popping bugs. They came as if they had not eaten for months, as if my "bug" might be the last morsel of food ever to pass their way.

The Susquehanna is not always this generous, and there are evenings when its inhabitants are tight-lipped and taking the bronze fish is possible, but not easy. There's more than the bass that attract me, however—it is the river's size, its awesome features, the boulders, and the islands of water willows. The geese and ducks that come under a setting sun to splash down and then noisily find their resting grounds for the evening. The herons and even occasional

A River's Fate



Dan Martin

eagle that soar above the waters all add character to the river.

The habitat for smallmouth bass here is second to none and the fish are wild in nature. Incredibly, this section of the river remains virtually untouched, despite a nearness to the city of Harrisburg and the small towns and burgs that hug the banks. Residents have accepted the wealth of the river graciously—until now.

Unfortunately, it seems that all things still preserved, still resembling the past, are at one time or another threatened. This free-flowing section of the Susquehanna is no exception. The city of Harrisburg has developed a plan to place a hydroelectric dam across the river. The proposed dam would back up water into the now free-flowing sections of the river. The section I fish would be raised an additional two to 2 1/2 feet, making wading impossible.

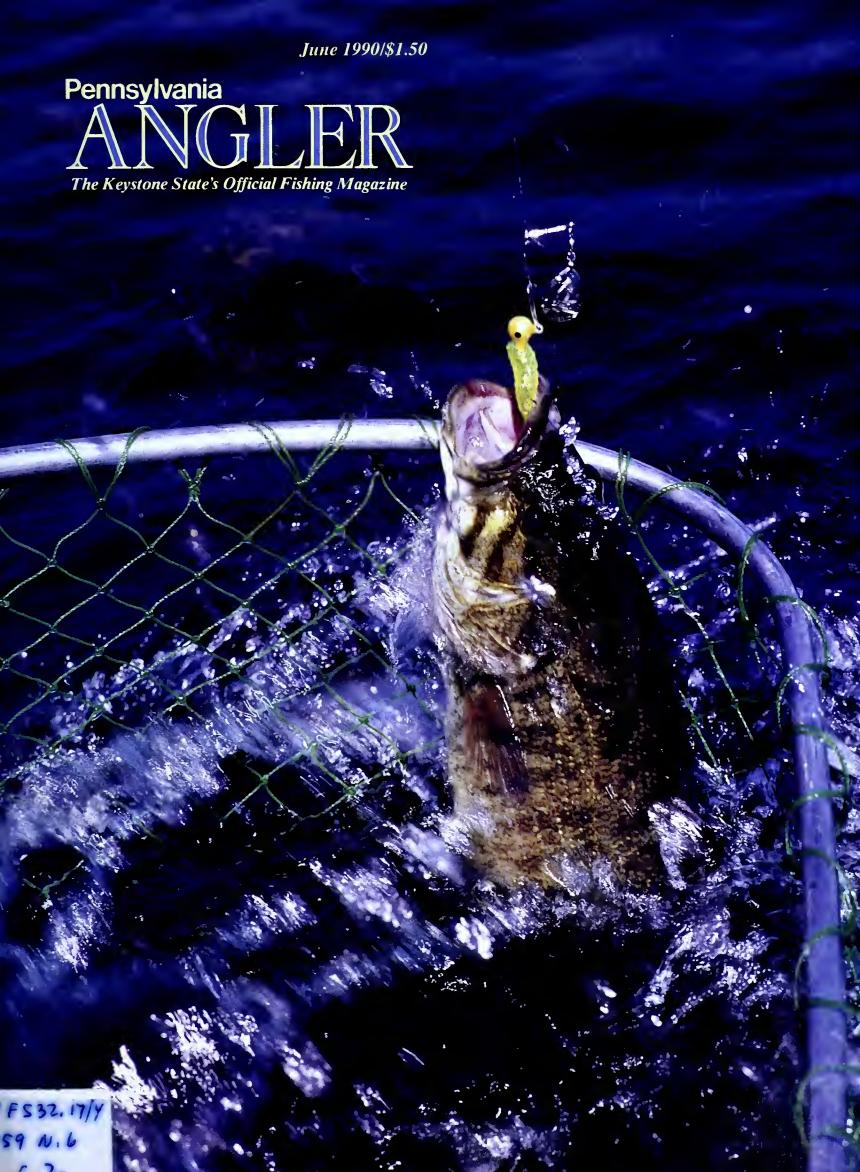
Environmental agencies, including the Fish Commission, oppose the project. The Commission believes that the proposed dam would have a detrimental impact on the wetlands and smallmouth bass populations. It would also be another hurdle in the path of the Commission's shad restoration program. Sportsmen's groups have rallied against the proposal.

As the city and the state and federal agencies involved battle over whether or not the dam should be built, I have personal concerns about the project. It doesn't take years of fishing or casting over the waters of this river to realize that such a dam would replace the silt-catching capabilities of York Haven, the dam immediately downstream. Nor does it take a degree in biology to understand the such a project would eliminate fishing for those who grab an old pair of shorts and sneakers and prowl the shelves to cast for the bronzeback bass.

It would quickly remove the magical spell that the river casts on me and those who visit often. Why do we need to drown some of the finest habitat found anywhere for smallmouth? And what will become of the geese, herons and other wildlife that find this free-flowing river to their liking?

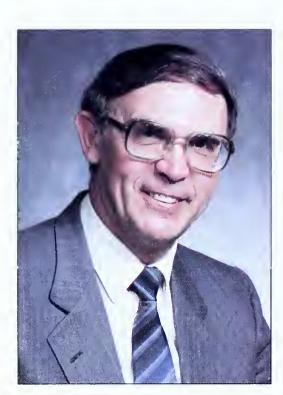
A gentle breeze laps the waters around my waders. Beneath the setting sun that reflects a brilliant orange glow across the waters, I work my way carefully, following the ledge to the shore. The geese sound restless, lost in the darkness that now surrounds the river. With the setting sun a chill sets in, prolonged by my damp clothing. I sit and watch the waters flow silently by. The river seems unaware of its possible fate. To be certain, it is an issue that will not be settled quickly and the thought somehow robs me for the moment of the tranquil magic the river always creates.





Straight Talk

Responsive Management



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

This issue of the *Angler* is dedicated entirely to bass fishing for an important reason. Interest in bass fishing in Pennsylvania has been increasing in recent years, and it has become one of the most desired angling opportunities in the state.

This change in fishing interest and the diversity of opportunities anglers and boaters seek will play an important part in how Pennsylvania's fishery resources are managed in the future. As the Fish Commission begins a major planning effort for managing the fishing and boating resources of the state into the 21st century, one of its goals is to become more responsive to your needs as a resource user.

Commission biologists have spent the last two decades gaining a better understanding of the potentials and limitations of the Commonwealth's aquatic resources. The Fish Commission is more aware of the many problems the resource faces from the continued demands placed on it. It is time to use this knowledge to plan for the future use and protection of fish and boating resources statewide. It is also time to inform every citizen about resource problems and management alternatives.

If you drink a glass of water in a restaurant in Philadelphia or hook a steel-head on the shore of Lake Erie, you are a resource user who relies on the continued protection and quality of that resource. Every user should be knowledgeable and concerned about the quality and management of the water resources in Pennsylvania. Within the decade, crucial decisions will be made about our common wealth, the aquatic resources of Pennsylvania. The optimum management of these resources will require your help and commitment.

As a resource management agency, the Fish Commission has accepted the responsibility to educate Pennsylvanians about the aquatic environment. Our staff has to present the facts and management options to you as users and seek your opinions. Your opinions have to be included in future management plans that meet your expectations while protecting the resource.

The Commission has already responded to your opinions and needs by developing a nationally recognized environmental education program that is designed to reach every student in the state's school systems. This was accomplished by asking teachers what their environmental education needs were and designing a program to met those needs.

Recently the Commission asked your opinion on increased funding for trout and salmon management. Your letters and testimony at six public meetings provided overwhelming support for a way to increase funding to maintain the coldwater program.

During the next few years, the Commission's entire staff will be planning ways to manage the state's fishing and boating resources better for future generations. They will be seeking your opinions, thoughts and ideas through phone surveys, mail questionnaires and on-site censuses.

The goal is to become more responsive to the needs of anglers and boaters using Pennsylvania waters. As you pursue Pennsylvania's many fishing and boating opportunities this summer, let your needs and concerns about the future of the resource be known. Make an effort to get involved and stay involved in the protection and wise use of Pennsylvania's aquatic resources. Your involvement and support will help the Commission meet the goal of being more responsive in planning and managing Pennsylvania's aquatic resources and ensuring rewarding fishing and boating opportunities in the future.

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Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

Spoons for Hot-Water Bass by Bill Ignizio Spoons are versatile, productive bass-getters
Tackle for Pennsylvania Bass Fishing by C. Boyd Pfeiffer Successful bass fishermen choose different rods, reels, lines and lures for the variety of smallmouth bass and largemouth bass fishing in Pennsylvania
The Natural Approach to Bass Fishing by Michael Lacy Raise your score by reviewing Pennsylvania's best natural baits and how to fish them
Pennsylvania's Bass Management by Darl Black Learn how the Commission manages largemouth and smallmouth bass. Lean this way and let the Commission area fisheries managers whisper to you the where-to-go-fishing secrets
Bass Fishing in Pennsylvania and Around the World by Nick Sisley How does Pennsylvania bass fishing compare with the bass action in other parts of the country and in other places around the world?
Worm Fishing for the 1990s by Darl Black Today's plastic worm techniques are more effective and more refined than the rubber-worm days of the 1950s
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On the Water with Dave Wolf

The covers

Smallmouth and largemouth bass splash into the spotlight in this entire issue. Doug Stamm photographed the smallmouth bass on the front cover, and on the back cover, Judy Payton proudly hefts a 5 1/2-pound Raystown Lake largemouth bass she caught on a plastic worm. WCO Alan Robinson took the picture. If you like to catch bass on live bait, check out page 11, and lure fishermen will want to scan the articles beginning on pages 4, 22 and 26. Turn to page 19 to compare Pennsylvania bass fishing with the action available in other parts of the country and in other parts of the world. For the lowdown on Pennsylvania's biggest largemouth and smallmouth bass catches in 1989, see page 29.

SIOUS FOR BOLL BOLL BURNESS BY Bill Ignizio

It was a perfect day. A few wispy clouds floated high in a brilliant blue sky, temperatures held in the upper 70s and the calm lake surface reflected a rich turquoise hue. Yes, it was absolutely perfect for almost any outdoor activity you could think of...except for bass fishing. At least, that's how my partner and I felt after several hours of failing to arouse the interest of a single fish.

Finally, we nudged in closer to the heavily weeded shoreline to try our luck there. While I experimented half-heartedly with a weedless popper, my friend tied on a plastic spoon. Now, if you like your lures to twist, turn, shake, rattle and roll on retrieve, this is *not* the bait for you. The unusual topwater attractor merely slithered quietly over weeds without fuss or fanfare. Although the presentation may have seemed uninspired, it obviously appealed to the hefty bass that blasted through the greenery and engulfed the spoon.

This was not the first time I had seen bass caught with this odd lure. While it may not look particularly impressive, the plastic spoon is able to navigate easily through thick weeds without hanging up. During summer months when aquatic vegetation proliferates to the extreme, this is no small feat.

It's a safe bet the bass my friend caught that day had seen few if any other lures invading its domain. Glitzy action, in this case, was not nearly as important as the simple fact that the bait could be worked where most others could not.

Because plastic spoons don't weigh much, they ride high over most types of greenery you'll encounter on Pennsylvania waterways. These lightweight spoons aren't fished nearly as much as their metal counterparts. But summer anglers would be wise to carry at least a few in the tackle box for those times when hot-weather bass can be found lurking beneath the shade of lily pads or under thick carpets of coontail and duckweed.

Some plastic spoons have a flattened configuration. Others are concave. A few

models sport rattles inside a hollow body, making for a noisy presentation when fish want something a little extra. The important factor is that all are relatively light. Therefore, they rarely sink into the vegetation.

There are those who find it difficult to believe that bass can actually see a topwater spoon worked in areas thick with weeds. Actually, it is possible they often do not. Some anglers have theorized that the fish home in on these lures by the motion they detect topside or through vibrations given off. Whatever the case, they work. And to the pragmatic summer fisherman, that's all that counts.

Because plastic spoons show little in the way of action, most bass anglers add some sort of trailer. Twisty-tail plastic worms and grubs, undulating skirts, bogus rinds, hair, tinsel or feather tails all make the baits more enticing.

Another productive shallow-water weedless spoon is a version made of thin lightweight metal. Many companies manufacture such lures, and all exhibit similar characteristics. They are known by various names, but all of these gurgling topwater spoons show a pronounced upward

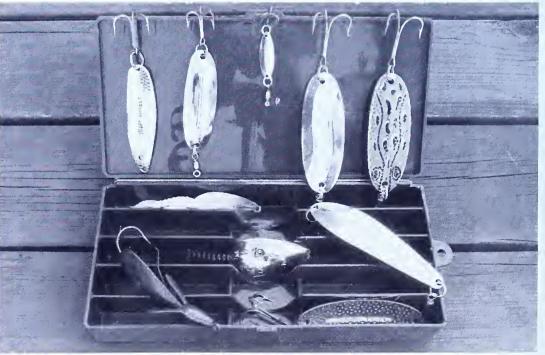
bend in front and are usually outfitted with a rubber skirt. It is the angled design that causes the thin metal lures to wobble tantalizingly back to the boat.

Retrieve

Although plastic or thin metal topwater spoons hang up less than most lures, it is a good idea to begin your retrieve the instant the lure touches down. This practice almost always guarantees a snarl-free retrieve.

A number of fishermen use casting gear in heavy vegetation. A problem can arise when the angler switches hands. In the instant it takes to accomplish the maneuver, the lure may settle down and hang up. To avoid this irritation and the unproductive retrieve that

usually results, practice, switching the rod from one hand to the other until you can do it quickly, proficiently and effortlessly



Bill Igmzio



before the spoon even touches down.

Another solution is to substitute heavyduty spinning gear. You need not switch the rod over with this outfit, so the problem is eliminated.

A final way out of the dilemma is to fish a left-handed casting reel. This outfit does not require a right-handed angler to perform a slight of hand while the lure speeds toward its intended target.

Whatever you decide, don't make the mistake of fishing light or moderate weeds to avoid hang-ups. Summer bass can often be found in the thickest weed growth. Steering clear of these spots means fewer snarls, but results in fewer bass.

While lightweight metal spoons are excellent for probing heavy weeds, they are also effective in areas of moderate weed growth as well. A thin metal spoon can be yanked over areas of scattered lily pads and weeds, and then wobbled through stretches of open water. From

time to time, stop cranking. This causes the spoon to flutter down in pockets or along the edges of weedlines, both of which are good bass hideouts.



This nice bass nailed a plastic spoon that slithered enticingly over the greenery. Big bass often lurk beneath the shade of lily pads and thick carpets of vegetation.

Standard weedless spoons are heavier than the upturned lightweight models, but they are also good summer bass producers. One of the best known of these spoons is the Johnson Silver Minnow. As well as the traditional silver finish, the lure comes in a wide array of bass-tempting colors and sizes.

These spoons may also be fished in fairly thick weeds, but they are even better in light to moderate vegetation. An advantage with the heavier spoons is that they don't take long to hit bottom, a quality that can be helpful when bass are holding deep.

Noise

When summer bass ignore a quiet presentation, try waking them up with noisy buzzing spoons. These topwater lures make a racket and can be worked along weedlines, deep-water docks or in and around stumps and fallen trees. Make sure the propeller or spinning mechanism revolves smoothly without hitch or halt.

This spoon selection shows (left to right) a plastic spoon, standard spoon with exposed treble hook, upturned lightweight metal spoon and a buzzer spoon.

Line

When fishing spoons in areas of heavy weeds or wood, you'll want to spool up with heavy line to avoid break-offs. Baitcasting provides the ultimate power for times when you find it necessary to winch bass out of thick cover. However, you may have difficulty working a casting outfit in heavy cover. In this case, you can use heavy duty spinning gear outfitted with 14-to 17-pound abrasion-resistant monofilament line.

Some anglers who use baitcasting rods in thickly wooded or weedy spots may even resort to braided line in the 25-pound or heavier class. With this kind of muscle, a bass is pulled rather than played back to the boat.

Not all summer largemouths are found in shallow cover-laden locations, of course. Other spots where you'll confront dog-day bass include points, depressions, humps and channels. Although some of these areas call for weedless spoons, most can be fished with lures sporting exposed hooks. What you lose in snagless characteristics will be made up for in increased hooking capability

To help recover the inevitable hung-up spoon, carry along a lure retriever. You'll find the device soon pays for itself, especially when you fish deep-water structure covered with lumber or rocks.

Trolling, jigging

Although not a common tactic, it is possible to troll spoons for summer bass. This technique makes sense when fish are scattered, because it allows you to cover a great deal of water in the shortest possible time. Trolling a spoon calls for a fairly heavy lure. Lighter spoons may also be trolled with a weight squeezed on the line several feet above or tied behind another bait.

Spoonplugs, those mangled baits designed expressly for trolling various depths, have been successfully fished for years. A stretchless or near-stretchless line and a rod with plenty of backbone are good choices for trolling.

Jigging is another tactic that is productive when bass are laying low. The jigging spoon, because of its compact design and heavier weight, is a good selection for implementing a vertical presentation. These spoons are made by several manufacturers and come in a variety of sizes and weights, suitable for fishing a wide range of water depths.

Standard treble hook-adorned spoons may also be worked for deep-water bass. They can be hopped, skipped, bumped or jigged. Sometimes it is best to let the lure remain motionless for several seconds before hopping, skipping or jumping it back. Bass often hit spoons on the drop, so be alert for strikes.

Because of the exposed treble hooks, standard spoons are often fished in relatively open water. They may also be worked in weedy, woody or rock-encrusted areas by replacing the treble hooks with singles. These lures are fine for taking hot-water bass from rockpiles, bridge riprap and bars. Outline in your mind the structure to be worked and make certain every notch and nook is fully explored before moving on. Switch colors and sizes until you find the combination that clicks.

Unusual method

A friend consistently takes hot-weather bass fishing docks and walls on his favorite lake. One of his spooning methods is unusual, but very productive. Using a weedless or single-hook spoon he actually casts on top of walls. Then he slowly nudges the spoon back into the water, allowing it to hit bottom before slowly swimming it back. Often a wall-bound bass hits the lure on the drop. This tactic is tough on spoons, but it works for him. As he has proven, spoons can be fished in many spots reserved for other "more traditional" summer baits.

Quality spoons generally cost more than second-rate efforts. Although rip-off models may look like brand-name products, they rarely perform as well. There's a reason for this. A cheapie spoon is usually produced with little attention paid to the finer points. Stick with known brands, and you'll be better off.

The shape, construction and thickness of spoons play a part in how they work. Thinner ones, for example, wobble more than thick-bodied baits. Those that are deeply concaved wobble more. Thicker spoons cast farther and are generally better for fishing deep water.

I teamed up with an angler some years ago who enjoyed fishing spoons for bass. Unfortunately, he almost always used a standard red-and-white model. He claimed he caught more bass with that particular bait than with any other spoon. No wonder. After all, he rarely fished anything else. If he had, he might have been surprised to



Rill Ionizio

learn that other types of spoons work as well or better than his old reliable.

Summer bass can be finicky. Color and size can and often do make a difference. If a favorite spoon doesn't produce, don't hesitate switching to a different one. Try various presentations, too, and fish the lure at different speeds.

Yes, summer bass can be caught on spoons. And because these lures can be worked topwater, mid-depth or deep, they are versatile as well as productive. Give them a fair trial and you'll find that spoons catch hot-water bass for you.



Some spoons you may wish to try include jigging models such as the Strata, Hopkins, Krocodile, Double Squirt and Bomber Slab. Casting spoons include the Williams Wabler, Acme Little Cleo, Burke Hawkeye and Luhr-Jensen Rattlesnake.

For weedy or woody locales, the Heddon Moss Boss or Fromme Weed Hopper do a fine job. Snagless metal spoons include the Barney Spoon, Renosky Laser and Johnson's Silver Minnow.

When summer bass prefer a ruckus, consider buzzing spoons such as the Lindy Little Joe Skitter Buzz, Herb's Dilly or the Weed-Wing.—*BI*

Tackle for Pennsylvania Bass Fishing



Just as golfers need different clubs for long holes and short lies, so do bass fishermen need completely different tackle for the variety of bass fishing water in Pennsylvania. The ideal tackle for smallstream or shallow-river fishing must be totally different from the gear selected for Erie smallmouth or Lake Arthur largemouth. It is not so much a difference in the species of largemouth vs. smallmouth as it is the type of water fished and the conditions that must be mastered to get the most fun out of the fishing.

By dividing largemouth and smallmouth waters into categories, there are definite preferences among most anglers for the best rods, reels, lines and lures. Here are some categories.

Big water

This group includes reservoirs, large lakes and deep rivers. Examples are the smallmouth fishing in Lake Erie, the fishing at Lake Wallenpaupack, Lake Arthur, Pymatuning and Kinzua and even the lower Delaware River. Because Erie and Lake Arthur differ greatly in size, the key is not so much the water acreage, but the water depth and the type of fishing required.

Characteristic of these waters is the necessity for a boat to fish them successfully. Spinning and casting tackle are best for these lakes. Most experts on these waters agree that casting tackle should consist of a 5 1/2- to 6 1/2-foot rod, the shorter rod for casting underhand beneath shoreline branches and boat docks, the longer rod for long open-water casts to schooling fish or to cover a lot of water with an explorer bait.

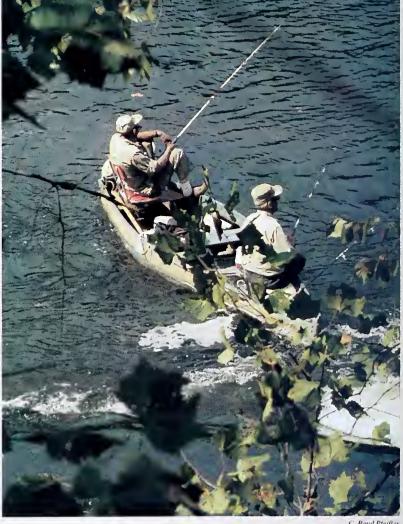
Medium power is best to cast the typical 1/4- to 5/8-ounce range of lures that are typical for this basic bass fishing. Where flipping is possible in tight structure, heavy rods of 7 to 7 1/2 feet are standard, used with revolving-spool reels that are specifically designed for this specialty fishing, or equipped with a "flipping switch" that allows a casting reel to change instantly to a flipping reel. Typical lures for this heavy line flipping technique include worms, jigs and spinnerbaits.

Reels depend on the type of lure, which varies with the season. Most companies today produce both slow-speed and highspeed reels. The slow-speed reels with gear ratios of about 3:8 are best for deep-diving crankbaits and for those lures you want to work slowly along the bottom through weeds or around structure. High-speed reels with gear ratios of 6:2 or higher are best for the rattling sonic lures, spinnerbaits, buzzbaits and spinners. Some companies even have two-speed reels, although most anglers prefer having several different but closely matched reels, each teamed to an appropriate rod, line and lure.

In most cases, bass fishing is best with the narrowest spool reel possible, although wide-spool models are best for trolling for their greater line capacity. When trolling, or fishing bait for bass, a reel with a click alarm is handy to signal a hit.

Line also varies with the fishing and season. As a general rule, the most sensitivity, lure depth, and casting distance is achieved with the lightest line. But for fishing in heavy brush, downed logs or through weeds, 15-pound or heavier test line might be required. Heavier line works with spinnerbaits, buzzbaits, jigs and worms. Crankbaits, topwater plugs, sonic lures, structure spoons, and spinners perform best with the lightest lines.

Rods for spinning usually range from 6 to 7 feet, although today there is a trend to slightly shorter spinning rods. Rods with a lure range of from 1/8- to 1/2-ounce are best for this open-water fishing, because the lures used are often interchangeable with those for casting tackle.



Equipment for shallow rivers includes 6-foot light-action spinning outfits for lures no heavier than about 3/8-ounce.

Spinning reel sizes range widely, but for this big-water fishing, those characterized in the catalogs as "medium freshwater" are just right. They hold adequate 6- to 12-pound-test line that is favored by most experienced spinfishermen, and they are lightweight for comfort.

A good drag is a must, although anglers argue over front vs. rear drag systems. The trend today, and of many experts, is to front, spool-mounted drags. The choice of manual reels or the auto-casting reels on which a lever opens the bail for casting is a personal one. Some reels have a front drag with an additional rear drag that is independent and allows a light "baitfishing" drag without opening the bail or disturbing the pre-set front fighting

Lures for big-water Pennsylvania fishing include all the standard baits for bass fishing, but vary with the season and the fishing. In early spring and mid-fall, shallow water lures are best for fishing surface structure, shorelines, weed beds, creek mouths, points and back coves as the fish tend to move into the shallows for food. In mid-summer, the fish may go into the shallows at dawn and dusk, but they go deeper along breaklines where deepdiving crankbaits, jigs, structure spoons, bullet-weighted worms and even tube lures work best. Often the lighter-weight lures and those used for open water are used with spinning tackle, those larger lures for rougher weed-and-structure fishing coupled with the heavier-line casting tackle.

Fly fishing on big water is rare, and usually confined to the shallowwater fishing in back coves in the spring, summer and fall. Typical tackle includes a 9 1/2-foot parabolic-action rod, single-action or multiplying reel, weight-forward 8-weight floating line, tied to a 9-foot leader. Cork and foam bass bugs, keel flies, streamers and large nymphs are favored.



Fly fishing tackle for medium-sized ponds and lakes includes 8- or 8 1/2-foot rods matched with 7- or 8-weight lines.

Lures for ponds can include all the standards, but usually in smaller sizes and usually in shallowerrunning models. Thus, big-water fishing requires the deepest diving lures in midsummer, while ponds, depending on their depth, often have more area of shoreline shallows and less center depth. This difference suggests medium- and shallow-running crankbaits and more topwater lures, spinnerbaits and buzzbaits than would be used in big-water fishing.

Fly casting tackle can be identical to that used for big-water bass bugging, or it can be sized slightly down,

C. Boyd Pfeiffer

Medium-sized ponds

Included in this category are the many small ponds and lakes in Pennsylvania. They can be small public facilities or private farm ponds where permission to fish is granted. Size is one criteria. They are also fished as frequently from shore as from small boats. They have limited variety of structure when compared to larger waters, and they are almost uniformly shallow.

Much of the same tackle used in big-water fishing is equally applicable here. The shoreline cattails, water weeds, surface weeds such as lily pads and spatterdock and the occasional dock require heavier lines for the typical casting rod. Open waters are fished best with the lighter lines and easier casting of spinning tackle. Rods for both can again range from 5 1/2 to 6 1/2 feet for casting and 5 1/2 to 7 feet for spinning. Both casting and spinning reels described above work fine on these waters.

Some ponds have little structure and thus benefit from lighter lines fished in the depths. Others have heavy shoreline structure where heavier line is a must to get a lure back and to horse a fish out of the weeds.

depending on the water and the fish. If the bass favor large, standard bass bugs and flies, stick with the 8-weight outfit described above. If they hit smaller bugs readily, more of panfish size, try an 8- or 8 1/2-foot rod for a weight-forward 7-weight line, 7- to 9-foot leader and smaller flies, bugs and streamers.

Shallow rivers

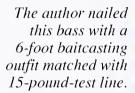
Pennsylvania is blessed with a number of shallow smallmouth bass rivers such as the Susquehanna, upper Delaware and the Juniata. All of these and dozens more like them can be fished by wading wet in the summer, float fishing a canoe or john boat, or shore fishing. The fish are often more plentiful than in ponds and lakes, but they are also often smaller. As a result, there are distinct differences in the tackle used on these rivers than that used on ponds and in big-water reservoir fishing.

Because of the smaller fish and the resultant lighter lures used, spinning tackle is most popular. Typical spinning gear for river fishing (primarily smallmouth) includes a 5- to 6-foot light-action rod that casts 1/16- to 3/8-ounce lures. A light spinning reel,

one size smaller than the "standard" reel used in reservoir and pond fishing, is ideal. In this lighter size it still holds enough 4-to 8-pound-test mono that is best for this fishing. The same features of good front or rear drag, and the choices of an auto-casting or manual bail apply.

Because of the light lures used, casting tackle is less popular on rivers. Where used, the lightest narrow-spool reels are a must, filled with 6- to 10-pound-test line. Because flipping is seldom done, reels with these features are not necessary. Here a para-

bolic-action rod is best for ease of casting light lures. The best lengths of rods for river fishing are 5 to 6 feet. When wet-wading rivers, choose the longer rods because wading lowers your casting position in the water and reduces casting distance.





C. Boyd Pfeiffe.

Because of the lighter lures and the notion that river wading for smallmouth is a family sport, spincast tackle is also excellent. The same type of light rods coupled with a small freshwater spincast reel, factory spooled with 6-pound-test line, is ideal for this fishing.

Lures for river smallmouth bass include just about all the main categories, although in much smaller sizes. Crankbaits, topwater plugs, sonics, spinners, spinnerbaits, buzzbaits, worms, jigs, tube lures and spoons all work well. The main difference is in size for the smaller fish that are typically caught. The smaller, lighter casting and spinning tackle is matched to the size of the fish and the weight of the lures.

Most crankbait, topwater and sonic lure manufacturers have small 1/10- to 1/4-ounce lures that are ideal for this fishing. As with ponds, the rivers are shallow and shallow- or medium-running lures are best. Similarly, small 1/8-ounce buzzbaits and spinnerbaits are readily available, along with small standard spinnerbaits that are ideal for smallmouth bass. Tiny jigs of 1/32- to 3/16-ounce are also effective in both riffles and pools. Small 3- and 4-inch worms, drifted with an upstream or cross-stream cast, are similarly excellent for river smallmouths.

Fly fishing for smallmouths on rivers requires markedly different tackle from that used for pond and lake largemouth bass bugging. River smallmouths are almost like trout in their preference for flies, so small panfish bugs, sponge surface bugs, streamers and trout nymphs are best. For this a weight-forward 6-weight line will carry the fly. A multiplying reel is a nice touch for either wading or boat fishing, but single-action reels are also fine. For wet wading, consider a longer rod, something about 9 to 10 feet long to make up for the elevation lost by wading. Make sure that it has a crisp action to get the fly out to the fish without excessive

false casting. For drift fishing from a boat, a rod of 8 to 8 1/2 feet works fine and gives enough reach to hit all the best spots.

Stream fishing

Lower reaches of the foothills and meadows throughout much of Pennsylvania can provide almost untouched fishing for smallmouth bass and occasionally largemouth bass. Here the bass can be treated almost like trout in the selection of tackle. Spinning is preferred, but in even lighter form than for river fishing. Break out the ultralight tackle. UL rods of 4 1/2 to 5 1/2 feet, casting lures from 1/64- to 3/16-ounce are ideal, matched with the smallest open-face spinning reels. Most of these smaller reels don't have many options, but should include a good drag. Four-pound-test line is best, but 2-pound test is OK for the skilled and adventurous while 6-pound-test is better on snag-filled streams.

Ultralight casting reels are available but rare. The same applies to ultralight casting rods. For this reason, casting tackle is seldom used, and when it is used, it should match the 4- to 6-poundtest line choices of small-stream fishing. Tiny lures are best. The range is more limited because usually only small crankbaits, topwater plugs, spinners, jigs and tube lures can be found in the sizes required.

Fly fishing is ideal on these smaller streams, and any trout tackle can be used. The flies cast for smallmouth are small streamers, wet flies, nymphs and tiny bugs, so any small-stream trout tackle can be used. An ideal outfit would include a 7 1/2-foot rod matched for a weight-forward 5- or 6-weight line, tapered leader and small, single-action fly reel.

Basics of choosing tackle

All these ideas point out differences in many types of Pennsylvania bass fishing, but there are certain basics to choosing any bass tackle. Quality tackle is a must. For most fishing, this means good-quality graphite or graphite-composite rods. Graphite is particularly important in fly rods and river tackle where it helps increase casting distance. Comfortable handles are important, and skeletal reel seats help increase rod sensitivity. Good guides such as those of silicon carbide, aluminum oxide and Hardloy are ideal and prevent grooving and line wear.

Quality casting and spinning reels in the sizes required for the fishing are available from any of the major tackle manufacturers. Quality and expensive fly reels are widely available, but good inexpensive models are also available. Choose top-quality premium line for all fishing for the best tensile strength, knot strength, abrasion resistance and casting ease.

Lures should be the right size, type and finish for the water. Shad, sunfish and perch colors are good starters for big-water crankbaits. Crayfish and minnow colors are best for rivers, small ponds and streams. Spinnerbaits and buzzbaits in white, black, chartreuse and yellow are ideal for all waters. Jigs in black and brown or crayfish colors are best on big waters, while bright-red, white, yellow and even black are ideal for drifting leadheads in rivers and streams. Motor oil, purple, black and smoke are good worm colors for reservoirs. Glitter-filled short worms in smoke, motor oil, clear and brown are proven producers on streams and rivers.

In all your bass tackle purchases, consider first the water to be fished, the type of structure, and the size and weight of lures necessary to take the fish under those conditions. Lure size and fish size determine other factors such as line test, rod length and action, and reel features. Careful thought before hitting the tackle shop can save money now and improve fishing later.

The Natural Approach to Bass Fishing by Michael Lacy

It might come as a surprise to some bass anglers, but the natural diets of largemouth and smallmouth bass do not include plastic worms, surface poppers, or hard-plastic crankbaits. Natural baits can be an important part of successful bass fishing. This is a look at some of the favorite natural baits used by Pennsylvania anglers, and how to use these baits.

Hellgrammites, which are larvae of the dobsonfly, live under stones on the bottom of streams. Look for them in moving waters—riffles but not rapids. They can be caught by stretching a seine across the bottom, then disturbing the bottom upstream of the seine. Disturbing the bottom dislodges hellgrammites and other bottom creatures that might make good bass bait. Then the current sweeps the creatures into the seine. This method is also used to catch crayfish, sculpins, stonecats and madtoms, all of which are prized smallmouth bass baits.

Hellgrammites are about two inches to four inches long with segmented bodies. Hook them through the collar, which is the large segment immediately behind the head, using a size 8, maybe a size larger or a size smaller, fine-wire hook.

Madtoms, stonecats, sculpins and other small riffle fish should be hooked through both lips, inserting the hook through the bottom jaw. Crayfish are hooked through the meaty tail section. The hook size for these baits varies from 2 to 8, depending on the size of the bait.



Michael Lacy



Using natural baits can be a dependable, productive way of catching largemouth and smallmouth bass.

Madtoms and stonecats arc small members of the catfish family. I have always preferred soft-rayed baitfish, but there are some smallmouth anglers, particularly in the Juniata River watershed, who argue this point. Sculpins are another family of small fish that live among the rocks in swift water. They are dull-colored with large, bony heads. Like hellgrammites, you will not often find

sculpins, madtoms or stonecats in bait shops.

The small, hard-shelled crayfish that you catch by seining the riffles are excellent bass bait. I think bass are as cautious of pincers as we are, though, so choose the smaller crayfish. Soft-shelled crayfish are better bait, but they are not always available. In creeks or river riffles, hard-shelled crayfish are nearly as effective, and they are much more durable.

Fishing moving-water baits

These moving-water baits, and you can substitute nightcrawlers which are a natural food when washed into the creek by rain, are all fished in about the same manner. They are drifted with the current in the same way a fly rodder drifts nymphs for trout, with the appearance of natural food drifting in the current. In creeks, smallmouths inhabit about the same niche as trout, except that smallmouths are typically in the downstream ends of the creeks where there is more water, and the water there is too warm for trout.

Smallmouth bass are usually not right in the swift currents. They are more inclined to be in calmer areas adjacent to strong current, where swirling water washes in food. Work your bait behind rocks, logs and manmade structure, and anywhere swift current meets calmer water. Cast the bait into the swift current and let the current take the bait into the calmer places with a natural drift.

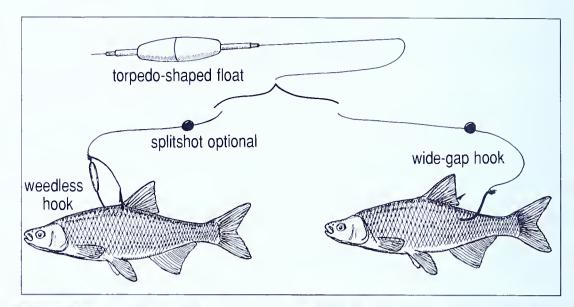
This method mostly concerns smallmouth bass in the rivers and creeks across the state. But largemouths that live in creek waters also feed on the same foods at the heads of the calm pools where the current sweeps in food.

Smallmouths are sometimes line shy, so use line in the 4-pound to 8-pound range. I prefer wide gap hooks, like an Eagle Claw 42, for all moving-water bass baits. All the weight you need is enough to keep the bait close to the bottom. If the weight anchors the bait on the bottom, you are using too much weight. A small to medium-size splitshot is enough. Do not use any weight if it is not necessary, which is often the case during the usually low stream flows of midsummer.

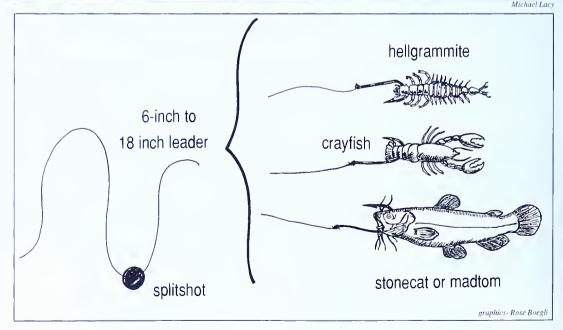
Lakes, reservoirs

Lakes and reservoirs present a much different natural bait fishing situation than rivers and creeks. Include bass fishing in large, calm river pools with lake fishing.

It is hard to beat soft-shelled crayfish as bass bait for both largemouths and







smallmouths during the summer. In calm water, where bass have more time to look over a bait, they seem more enthusiastic over "softshells."

The shells of crayfish are exterior skeletons. They must periodically shed their shells to grow. The new shell waits underneath the old shell, but it takes a while for this new shell to harden after the old one is shed.

During this hardening stage, crayfish are known as "softshells" by bass anglers. They are a favorite food of bass at this time because they are nearly immobile and defense-

To fish a soft-shelled crayfish naturally in a lake, it must be either still-fished or retrieved slowly across the bottom. Softshells cannot dart off in the characteristic tail-first swimming motion because the exterior skeleton to which their muscles are attached is not rigid. All they can do is crawl slowly. They can crawl in any direction, so it is not necessary to hook them

so that they move tail-first. Softshells are hooked in the tail to avoid killing them.

Use a size 4 or 2 wide gap, fine wire hook where aquatic weeds are not a problem. Use weedless hooks in weed beds. I like 8-pound-test line in open water, 10-pound or 12pound in sparse weeds, and 14- or 17-pound in thick weeds, where I use flipping gear to work the softshell into open pockets.

An area with a mixed bottom of rocks, sand and softer patches, with sparse weed growth, sort of a transition zone between the typical rocky smallmouth habitat and the typical weedy largemouth habitat, is my favorite place to look for trophy size bass, both largemouths and

smallmouths. Still-fish a softshell in such a place, moving the bait every five minutes or so. It might take a half-ounce of weight to pull the bait down through the weeds. You will catch big bass if there are any in the area.

At night, bass move onto rocky flats to feed on crayfish. This is one of the best situations for using softshells as bait, and one of the best opportunities for anglers without boats to catch big bass. Use a small splitshot or no weight at all, if possible. Sometimes you might need to add weight to cast or otherwise maintain control of the bait when it is windy. If you need the weight to make long casts, use a sliding sinker so that the bass does not feel the weight of the sinker when it moves with the bait. Largemouths generally do not mind carrying some weight, but smallmouths often do.

Shad, shiners

Gizzard shad are a big part of the bass diets in many of our best bass waters, including Lake Arthur, the large rivers in the Pittsburgh area, Raystown Lake, the Conowingo Pool and other lower Susquehanna River impoundments. Gizzard shad are not good bait, though, because they are difficult to keep alive.

A good bait minnow in these waters and elsewhere is the golden shiner. The golden shiner is shaped a lot like a shad, which might be part of the reason why it is so effective.

needed to keep the shiner away from the surface.

Emerald shiners are important dietary items for bass at Lake Erie and the Allegheny Reservoir (Kinzua). These shiners, among the shiniest and slenderest of all shiners, are fragile bait. Keeping them alive requires cool, well-aerated water and gentle, minimal handling. I avoid using them when the air temperature is above the mid-70s, which in effect rules out mid-summer fishing with emeralds. They are abundant in Lake Erie and the surrounding area, so many bait shops handle them year-round.



These are the same baits famous for catching huge Florida largemouths. They are relatively easy to keep, lively on a hook, and available at many bait shops.

When bass are tight to cover, there is no better way to draw them out than by fishing a live golden shiner tight to the cover. Work the shiners along weedlines, in open pockets in weed beds, and beside or right in cover such as trees, boulders, docks or other manmade cover. Hook the shiners close to the dorsal fin, either in front or behind, using a weedless hook if you are fishing in heavy cover.

A float is helpful when fishing golden shiners near or in cover. The float will give you a good idea of where the shiner is, and what it is doing. I like a torpedo-shaped float that a bass can pull underwater without much effort. I use a slip bobber if the bait needs to be more than about four feet below the float. A small splitshot may be

Emerald shiners should be hooked through both lips with a light-wire hook. No matter how careful you are, emeralds will not live long on the hook. Use fine-diameter line, 4- to 8-pound, in clear waters such as Erie or Kinzua. You are concerned mostly with smallmouths in these waters, so look for irregular rocky bottom. Use just enough weight to keep the shiner near the bottom. A splitshot is enough when still-fishing in calm water. A walking sinker keeps the bait where it belongs when drift-fishing. or when it is windy.

Finally, large bass usually take a bait completely inside their mouths on the initial attack. Set the hook quickly and you will usually hook the bass in the lip. This means there is a good chance the bass will survive if you release it. I assume that the bass I miss were small fish. In the long run, I'll hook more big bass.



Pennsylvania's Bass Management by Darl Black

Tackle and techniques for bass fishing in Pennsylvania have changed considerably in recent years. Today's demands on the fishery were never anticipated 15 years ago. With the availability of how-to fishing information and increasing angler pressure on the resource, sound fishery management is the cornerstone for the future of bass fishing in Pennsylvania.

Field investigative work and management recommendations for bass are the responsibilities of biologists in the Fish Commission's Division of Fisheries Management. The state is divided into eight fisheries management areas. Each area has a fisheries biologist—the area fisheries manager (AFM) who surveys the streams, river, lakes and reservoirs for all species in the management area.

During the spring, summer and fall, the AFMs spend much time in the field collecting data through trap netting, electrofishing and seining. They evaluate this data and prepare reports on each waterway. This information, along with creel surveys and on-the-water interviews of anglers, contributes to formation of regulations to manage the state's bass populations.

What is the status of Pennsylvania bass fisheries? How are bass populations managed? What are the best bass waters in the state? What changes can we expect in the future? Commission AFMs revealed the answers to all these questions.

What does bass management involve in your area? Does stocking of bass play any part? Do you have special regulations?

Craig Billingsley (Area One): Stocking plays a very little part in this area's bass management. Bass are self-sustaining—if they have the right type of habitat, they will reproduce and take care of themselves. Unless it is a new impoundment or we have a drastic fish kill, stocking does not play a part.

Most Area One waters are covered under standard statewide regulations. Lake Arthur is under the conservation lake regulations.

Some of our lakes have been recommended for the proposed Big Bass Program of 15 inches and two fish per day. Shenango, Hereford Manor Lake and Glade Run Lake could move into this program. The ultimate objective of the Big Bass Program is to provide a better fishery.

If angler use and harvest increase, are radical regulation changes necessary?

Ron Lee (Area Two): In the last two years we have been involved in trying to establish largemouth bass indexes. We survey lakes in late May and early June during the spawning period. We look at the total catch per hour—including the number of bass over 12 inches and the number of bass over 15 inches—and try to determine catch-per-effort data.

In addition, we have been looking at bass for four years in the conservation lakes, doing spring electro-fishing for background data on Sugar Lake and Kyle Lake.

No lakes in Area Two are stocked with bass. Natural reproduction is doing pretty well, for the most part. One lake where we are not getting largemouth reproduction is Tionesta, even though the lake was stocked periodically from 1940 through 1965 with largemouth. Tionesta just does not have largemouth bass habitat.

Bruce Hollender (Area Three): This district pretty much falls within the standard statewide regulations. We have special regulations on Colyer Lake. We reclaimed Colyer Lake, drained it, salvaged the bass and put them back in. I have not surveyed the lake yet, but the reports from bass fishermen indicate that it is now an excellent bass fishery.

Robert Moase (Area Four): I currently have two lakes stocked with bass fingerlings. One is fairly new, Hammond Lake in Tioga County. For some reason, the recruitment of largemouth bass has been very poor. We have gone with fingerlings to give it a shot in the arm. The other waterway is Stevens Lake in Wyoming County. The lake currently has a large population of black crappies, and the largemouth bass recruitment is low. So we are stocking fingerling bass to see what happens.

A special-regulation bass water in this district is Harris Pond. The regs are two bass, 15-inch minimum size, artificial lures only, and it is not open to ice fishing. Fishing is permitted at Harris from one hour before sunrise to one hour after sunset.

Dave Arnold (Area Five): As of right now, we stock no bass in the district, and no special regulations are currently in effect. We are looking at Big Bass regs, and examining waters to see if any might be candidates for that program.

Michael Kaufmann (Area Six): Generally, I would say that bass management in this district involves trying to overcome the problems created by overfishing southeastern Pennsylvania lakes. The ability of today's anglers to fish effectively is a phenomenon that has most of the AFMs fairly scared, and in the southeast it's difficult to stay one step ahead of anglers.

I try to use the most advanced techniques to manage bass that are currently available.

When I mention to anglers that a bass population in a given lake is overfished (cropped right down to the size limit), anglers ask why we don't stock bass. I explain to them that you stock fingerling bass over an established population only if there is a problem with reproduction. But in overfished



lakes, stocking gets nowhere because as soon as the bass reach 12 inches, they are removed by anglers and you are still left with sub-12-inch bass.

I am currently stocking Blue Marsh and Lake Nockamixon with bass fingerlings because we have identified problems with bass reproduction in those lakes.

This year Marsh Creek Lake will receive smallmouth fingerlings as a result of sportsmen contacting me, expressing the opinion that they think Marsh Creek looked like suitable habitat for smallmouths. I looked at it and agreed. We will try an introduction.

I have three Conservation Lakes in my district—Redman, Williams and Blue Marsh. Although those special regulations are aimed at all species, the bass have been stimulated the most by the regs.

I have a number of lakes proposed for the Big Bass Program, including Hopewell Lake and Marsh Creek Lake. I am also considering Struble Lake in Chester County and Lake Luxembourg in Bucks County as possibilities for the Big Bass Program.

Larry Jackson (Area Seven): The trophy bass regulations on the Susquehanna River Watershed are different from statewide standard regs. They were created because of angler concern that numbers of large spawning bass were harvested when concentrated before and during the spawn. However, the success of natural reproduction is by large numbers of bass in the 10- to 14-inch range. These bass do not carry as many eggs as do the bigger fish, but their sheer numbers account for the majority of the spawn. To protect these fish, the trophy bass regs (15-inch/two bass) were set to go into effect from the opening of trout fishing until mid-June.

Some anglers believe we should extend the special regs to the first of March to cover years with early springs. That is under consideration.

Richard Lorson (Area Eight): We have a Conservation Lake Regulation on Cross Creek Lake, put in place when the lake opened for fishing in 1985. Between 1985 and 1989 we studied Cross Creek to get an idea of what impact that type of regulation has on a lake. What it indicated was a significant cropping of bass when Cross Creek opened for fishing in 1985.



During the next four years, the fish populations remained stable and pretty much met the objectives set down in terms of

catch rate, harvest and population age structure.

We also have ongoing surveys on lakes, with night electrofishing targeting the bass—both largemouth and smallmouth. In the last two years I have looked at Lake Somcrset, High Point Lake, Yellow Creek Lake and Cross Creek Lake. I'll finish up Loyalhanna this year and look at the Youghiogheny Reservoir.

We also have smallmouth bass work going on at 18 river and stream sites in the district. This includes five sites on the Allegheny River, three on the Monongahela River, two on the Youghiogheny River and another eight on streams in Green and Washington counties.

I do not have supplemental stocking of largemouth bass. However, there were smallmouth stockings made in Yellow Creek Lake and High Point Lake for habitat considerations. We now have reproducing smallmouth populations in those lakes, which will take care of themselves. We re-introduced smallmouth bass in Stony Creek and Two Lick Creek because of improved water quality.

What is the status of the bass fisheries in your area? Any problems with forage or water quality?

Billingsley: Forage isn't a problem in this district, unless you get to some of the smaller impoundments. In most larger lakes, the forage is definitely there, usually in the form of alewife or gizzard shad.

Lee: The small lakes that have restrictions on horsepower (no motors or electric motors only) are doing well. Angling pressure appears definitely to affect bass fisheries.

Hollender: We don't have any problem with pollution. But I think a lot of the lakes in the district would benefit from better forage. This part of the state has limited fertility. It is not a limestone region. We don't experience the good bass growth rates as do other areas of the state.

Moase: Since the size limit went from nine to 12 inches, I have seen quite an improvement in bass populations in general. We do have several lakes in the district where bass haven't responded, either because of water quality or forage. One such waterway is Lily Lake. It seems to have a water quality problem with low alkalinity and pH on the acidic side.

Arnold: The bass fisheries in this district seem pretty good. Most people are satisfied.

Area fisheries managers (left and below) continually survey bass populations and habitats in Pennsylvania waterways. Matching the fish's needs to angler use and harvest, water quality and habitat are some factors that help create management plans.

Kaufmann: There have been lakes with forage problems, and we have gradually been addressing those issues. We have stocked gizzard shad in Nockamixon, Speedwell Forge, Lake Luxembourg and Kaercher Creek Lake. Additionally, I have introduced alewife to Nockamixon and Blue Marsh.

Jackson: I think some of the better predator/prey relationships are those rather simple, less complex bass fisheries. I'm not a fan of stocking too many species, including forage species, unless it is a last alternative. My experience has been that as you increase the complexity of the fishery, each management direction you go in to create a desired response demands an additional response from you. The more complex the fishery, the more difficult it is to manage.

Lorson: One positive aspect in this district is decreased mine drainage into some streams to the point where we could reintroduce smallmouth bass.

As far as forage goes, it is something we are constantly looking at. We may stock gizzard shad in Loyalhanna where there is a lack of the preferred forage base. I am also looking at Yellow Creek Lake. It has been proposed for the Big Bass Program, and as the bass predator population grows, the current forage may not sustain the increased numbers of bass.



Some anglers like to catch numbers of bass; others want to fish only for trophy bass. Where do you recommend anglers fish in your district? Are there any underfished bass waters?

Billingsley: For smallmouth bass, go to Presque Isle Bay and Lake Erie for numbers as well as for trophy fish. For good numbers of largemouths, and I *do* mean good numbers, go to Lake Arthur. There are also some trophy largemouths in Lake Arthur.

Only one lake is under-utilized for bass fishing—everyone at Pymatuning seems to be fishing for everything but bass, although my surveys turned up good bass in all sizes.

Lee: My recommendation for good bass fishing is to go to our Conservation Lakes. You can catch some big fish and a lot of bass just under 15 inches. These make good catch-and-release lakes.

Normally, I hesitate to recommend individual lakes because they get hammered. But looking at Lake Pleasant this past spring, we picked up 200 bass in a 90-acre impoundment. Most were over 12 inches and several went over 22 inches.

Hollender: For smallmouth bass you have to go to the West Branch of the Susquehanna River. For largemouths, I don't know what to tell you. All the lakes that have decent largemouth bass populations are fished by the tournament circuit people. There is nothing exceptional for largemouths in my district.

Moase: If you look at the distribution of bass sizes on any lake I have sampled for largemouths, as soon as you get beyond the legal size limit, there is a sharp drop in the numbers of bass, which indicates that anglers are cropping off the bass shortly after they become legal.

I shy away from saying where the trophy largemouth bass are found because you are going to create a lot of angling pressure. But I will drop a few names—Frances Slocum Lake and Harvey's Lake. For numbers of bass, one lake that comes to mind is Steven Foster Lake in Bradford County, and try Hills Creek Lake in Tioga County.

Another Tioga County lake people may want to watch is Cowanesque Reservoir. The lake is being enlarged to just over 1,000 acres. Normally, when you create new habitat, the bass respond well.

When it comes to smallmouth bass, I always direct people to the Susquehanna River because none of the lakes in my district compares to the river in terms of fish numbers and size.

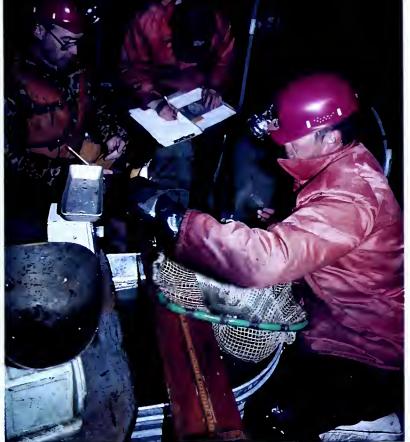
Arnold: There is a lot of pressure on all waters in the district. Mauch Chunk and Peck's Pond have good largemouth populations. Shohola Lake might offer some bigger bass. Of course, for smallmouth bass there is the Delaware River as well as Beltzville Lake and Lake Wallenpaupack.

Kaufmann: In all honesty, there are no waters that are underfished for bass. They all get pressure.

For smallmouths, I suggest the Susquehanna River, hands down. For largemouths, the waters I'd try are Lake Ontelaunee and Middle Creek Lake in the Middle Creek Wildlife Area.

Another good one I can mention that frustrates anglers is Muddy Run Recreation Lake owned by Philadelphia Electric. It is turbid and has steep dropoffs.

Jackson: I have a lot of angling pressure on all waters in my district. Once anglers figure out a lake, there is enough angling pressure on it to crop the bass right off at the legal length.



Darl Black

Go to the Juniata and Susquehanna rivers for smallmouth bass numbers and size. For wading or floating in uncrowded conditions, try Swatara Creek in Dauphin County and Sherman's Creek in Perry County.

Right now, our best largemouth bass lakes are Opossum Lake in Cumberland County and Shawnce Lake in Bedford County.

Lorson: There are no under-utilized bass waters in my district. Certainly Cross Creek Lake with a 15-inch and two-bass reg does have some big bass, but there are over 300 hours per acre of fishing pressure on this lake annually.

I also suggest High Point and Yellow Creek for largemouth bass, and the Youghiogheny Reservoir for smallmouths. The Allegheny, Mon, Yough and Ohio rivers offer a decent smallmouth fishery. There are spotted bass in the entire Pennsylvania reaches of the Ohio, Mon and Allegheny.

What changes in management and regulations do you believe would lead to improved bass fishing in your district? Should anglers expect radical management techniques in the future?

Billingsley: I would like to try out the Big Bass regulations. In some situations they aren't going to work. But there are situations where I am sure they'll provide a much better fishery.

If angler use and harvest increases, we may have to go to some radical changes. On some waters we may need to go strictly to eatch and release. We may have to try slot limits and reduce the creel. We may have to make a shorter bass season. And we may need to consider a quota system where a lake is closed to fishing after a certain percentage of bass are harvested by anglers each year.

Lee: It appears the change we made in 1981, going to a 12-inch size limit, just started showing up in the past two or three years. That has had a major impact on the bass fishery, providing stable bass populations, because the extra three inches ensure that bass are protected through the first spawn.

The 15-inch and two-bass regs proposed for a few lakes are going to provide good catch-and-release fishing, as well as some bigger bass. I think a lot of anglers will be pleased with that

Hollender: I'm not quite sure at this point. We are evaluating the Conservation Lake Regulations and considering the Big Bass regs for some waters. We might be looking at a slot limit in the future.

The biggest advances will be gaining a better handle on the angler harvest, and manipulating the forage base.

Moase: We currently have the option of going to the Conservation Lake regs. In this district, we have shied away from that because the bass populations have responded well to the minimum size change from nine to 12 inches.

We are always looking at different management techniques, and I would not be surprised to see some new things down the line.

Kaufmann: I think the Big Bass regs are a step forward. The only problem I can see with the Big Bass program is if the bass stunt below the size limit. There is a possibility we might

build up too much of an under-15-inch bass density in lakes where the forage base might not be able to support the growth of those fish. If that happens, the bass numbers would have to be thinned with a special quota system directed at the harvest of small bass.

The slot limit is the other possibility to that problem. The difficulty of a slot limit in Pennsylvania is trying to get people to obey the slot regulations. But I see the possibility of a slot limit sooner or later.

Jackson: I see the need on some lakes, in the future, for a slot limit. In some instances with the proposed 15-inch and two-bass regulation, the density of bass under 15 inches will build up and the forage base will not support the additional number of fish. To maintain the trophy aspect, the nice size, you might need to reduce the density of under-15-inch fish. A slot limit is an alternative.

Lorson: We are always looking at things to consider. When changes in fishing pressure warrant it, we may need to look at different fishing regulations. Whenever fishing pressure comes into play, we have to respond to it.

Fisheries biologist Rickalon Hoopes heads the Warmwater Unit of the Commission Fisheries Management Division. Part of his duties include reviewing the reports and recommendations from the area fisheries managers as they pertain to the warmwater/coolwater fisheries. With statewide responsibilities, Hoopes gets to view the "big picture." He plays an integral part in the management of bass in Pennsylvania.

When asked how important are the angler surveys requesting opinion on bass regulations, Hoopes says, "They are very important because we get an idea of the public's acceptance or attitude about a proposed regulation change. If the public does not accept the regulation, we could not expect compliance to be what we would want it to be."

If too many anglers believe a regulation is not beneficial, there may be widespread disregard, thereby defeating what the regulation was attempting to achieve. Voluntary compliance, Hoopes points out, is needed for successful management.

For years uniform bass regulations were applied to all inland waters of the state. Then in the early 1980s, fisheries managers began to respond with different management approaches to the changes observed in the evolving bass fishing scene.

"Different regulatory approaches allow different management objectives to be accomplished," explains Hoopes. "There are strategies that would allow similar water to be managed similarly. That has a lot of appeal. There are also approaches where regulations could be applied where the public wants them, if the desired regulations are more conservative than those needed to



Rick Hoopes: Commission Warmwater Unit Leader

protect the fishery. There could also be geographic approaches. There are merits to all three. Other than protecting the basic viability of fish populations, a lot of the alternatives depend on the public acceptance and what they want to see in terms of the quality of their fishing."

The recently proposed Big Bass Program for selected lakes is part of the ongoing effort to improve the fishery and meet anglers' desires for a certain type of bass fishing.

"What we hope to accomplish by the 15inch minimum and two-fish creel limit in lakes has been well-demonstrated at Cross Creek Lake," says Hoopes. "At Cross Creek, there is a high catch rate of bass, higher than we have seen anywhere in largemouth bass water in the state. But the price paid for that catch rate is a very low harvest. In 1989, the harvest was just about 250 bass over 15 inches, which is about one bass per acre from Cross Creek. You are sacrificing harvest to allow a high catch rate of bass that must be returned to the water. I'm not sure whether the angling public understands how much they are giving up, but there is no question that the anglers we interview greatly favor high minimum size limits on bass."

According to Hoopes, under the Big Bass regulations, there will be an increase in the

number of bass in the selected lakes, but it is not a situation where everybody can expect to catch a trophy fish. The lower creel limit prevents a large harvest of big bass by a few individuals on a particular day when the bass are aggressively feeding. This tends to redistribute the harvest to more anglers over a longer period.

The down side of "15 and two" is the possibility of too many bass in the under-15-inch population, which could lead to slow bass growth if the forage is not available to support them. If that were to happen in a lake, Hoopes says that remedial measures would be taken.

Monitoring a few Big Bass Lakes will be intense to ensure that stunting does not occur. However, Hoopes says that with more variety in regulations it becomes more difficult to monitor everything, given the limited manpower.

"From a biologist's point of view, we are well within the realms of protecting the bass populations," explains Hoopes. "So I guess at that point, that's where I feel the public should have some input in determining what the quality of the fishery should be. For any given scenario of regulations, we have the information now to pretty well predict what impact it is going to have on the bass population and the angling public.

"I view my role as being able to tell you what is going to happen in various `whatif' scenarios. But when it comes to actually deciding the set of regulations, I think as long as the public understands what the outcome will be, they ought to be able to decide which ones they want to live with."—

Darl Black

Dick Snyder

Bass Fishing in Pennsylvania and Around the World

by Nick Sisley

Smallmouth bass fishing off Pennsylvania's Lake Erie shore and in the Susquehanna and Juniata rivers is as good as it gets—anywhere! Smallmouth and largemouth sport in the Delaware River is excellent. Much of our state's lake and pond bass fishing is simply super. If you're assuming that the grass is greener for bass fishing in some other state, even in another country, you're probably selling Keystone State waters short.

I know because I've been fortunate to fish so many of our state's rivers, lakes and ponds (plus Lake Erie), but I've also cast for bass in many other states, several Canadian provinces and in other foreign countries.

How does our close-to-home bass sport compare with some of the highly touted waters a considerable distance away? Do the techniques used elsewhere differ greatly when matched against proven methods used here at home?

Panama peacocks

Bass can sometimes be suckers for topwater baits, no matter where you find them, no matter the species. For example, Panama has been in the news lately. But not many know that the Panama Canal, especially the part that's called Lake Gatun (pronounced *gah-tune*), is loaded with peacock bass.

This is a super bass species. It fights as hard as our smallmouth, is similarly aerial-minded, and its flesh probably makes it the finest eating bass of all—superb taste and firm, flaking fillets when not overcooked. No fancy preparation is required. Broil with lemon and butter and be ready for one of your best meals ever.

At Lake Gatun the peacock bass don't grow all that big, but they're plentiful, they're willing strikers, and they bite year-round. Fly rod enthusiasts there enjoy success with the same popping bugs that are effective on our ponds, lakes and rivers. Spinfishermen may do even better with light jigs tipped with plastic tube or twisty-tail grubs.



South America

Peacock bass grow much larger in the headwaters of the Amazon River in South America. I've fished for them in Colombia's Vaupes River, but this special bass is equally as plentiful in neighboring Venezuela.

The peacock bass gets its name from a large dark spot near the tail—similar to the spot on a peacock's tail feathers. The fish is also known as the golden bass because of the beautiful golden hue on both its sides.

Large largemouths

It's well-known that our country's southern waters are capable of producing large largemouth bass, compared to ours here in Pennsylvania. Our state record is 11 pounds, 3 ounces, but the world record is 22 pounds, 4 ounces. That fish came from a swamp near the Florida-Georgia border.

Many biologists claim that the Florida largemouth is even a different strain. I've fished for them in vast Lake Okeechobee, the St. Johns River and a number of other Florida waters. Several years back I fished in Cuba, Treasure Lake and Zaza Reservoir. Some of my biggest bass were taken there.

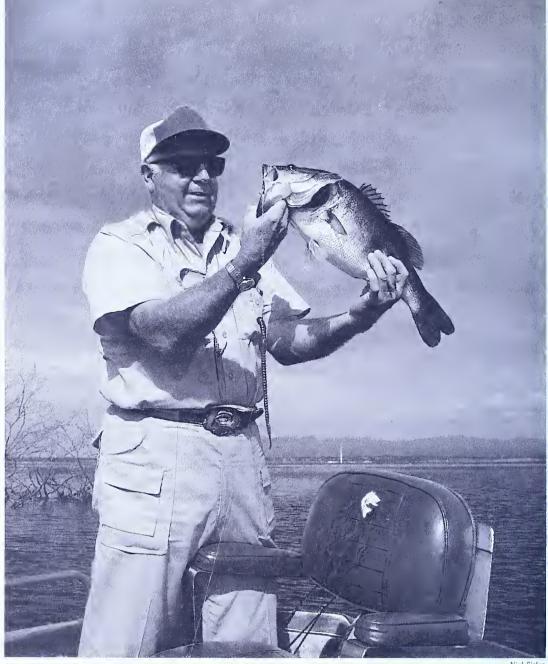
The hooker is that the biggest bass I've caught in Florida and Cuba are suckers for a plastic worm fished in cover, over a submerged hump, or near any underwater structure that borders deeper water. As most of you already know, it's exactly those types of conditions that produce top bass success right here at home on a plastic worm.

Canadian bass

There is a series of lakes near North Bay, Ontario, and across the border into neighboring Quebec. For several years straight I worked these waters with a fly rod in early June. The smallmouth were on their beds then, and some may chastise me for casting popping bugs at that time. I returned *every* bass caught during those ventures, and I made an effort to release them adjacent to the spawning bed where they struck.

This type of fishing is also available here in Pennsylvania. I implore you to return every bass taken from a bed, whether it's a big female that has just spawned or is getting ready to spawn, or if the smallmouth is a smaller male, because it guards the nest zealously. Top spawning areas here at home tend to produce year after year. Once you get to know where spawning areas are in your local rivers, you can enjoy plenty of fun season after season.

The same routines that worked in the Ouebec waters for me can work here for



Nick Sis

you. Try "hunting" for beds rather than blind casting. That tunes up the excitement factor to high. A fly rod for casting popping bugs is my favorite ploy—with bugs in size 2 or 4. Grizzly hackle tied in behind the cork or hair body has always been effective for me. I think the variegated grizzly hackle gives the illusion of motion from below.

Cast, give the bug one soft plop immediately after touchdown, and be careful not to pull the popper away from the bed. Count to 10. At about the count of seven, if not before, the bass below will "whoosh" your topside offering.

Similarly effective are the thin minnow plugs characterized by Rapalas and Rebels. Cast these to the beds, give a slight twitch and then start your counting. No matter which lure you're casting, work on soft touchdowns. Don't make your first cast directly on top of the bed, but try to cast close.

I can remember working trout lures in May in streams like Tionesta Creek, Pine Creek, the Youghiogheny River and a few other waters and hooking smallmouth bass A plastic worm fished in cover over a submerged hump takes bass practically all over the world—including here at home.



instead. The point is that lures other than poppers and thin minnow imitations can be quite effective for smallmouth.

Maine

The border of New Brunswick, Canada and Maine harbors some of my favorite bass water. Here the lakes and streams tend to be extra clear, so you can often see underwater structure, mainly rocks, ledges, shoals, points and vegetation. Being able to see such bass-holding cover telegraphs where you should cast.

With rocks and shoals I often opt for a crankbait with a good-sized lip. Then I crank it down so it bounces and ricochets its way back to my rod tip. With ledges, cast softly

to the top one, then slowly work a jig tipped with a plastic twisty-tail or tube grub down deeper, one ledge at a time. This is one instance when I have found that fish-attracting scents tend to be most effective.

Tennessee River system

Another top spot for smallmouth down South is below dams. On the Tennessee River system, below the TVA dams of Wheeler in Alabama and Pickwick in Tennessee, the bronzebacks have been both plentiful and cooperative. In these tailraces, the current these bass prefer, along with the food that thrives in such places, provides ideal conditions. Live bait can be deadly.

One minnow species, the crawlie-bottom, is the odds-on favorite. But they're hard to come by. You must know where to seine for them because they're not available in bait stores. Crawfish and hellgrammites are also superior.

Tailraces below dams in Pennsylvania can also produce top action for you. Those

that come immediately to mind are below the many locks on the Allegheny and Monongahela rivers in the western part of the state, and below the dams on the Susquehanna like York Haven, Safe Harbor and Holtwood. There are others. You probably know of small dams on small streams and rivers.

Try them. I suggest drift fishing where there's enough water and it's safe to do so. I'll never forget one trip, working marabou jigs below the Fabridam on the Susquehanna downstream from Sunbury. My guide and I caught and released well over 100 smallmouth bass that day, plus the odd channel cat and walleye.

Kentucky Lake (also a part of

the TVA system) has been one of the best bass producers for the past four or five years. The increase in the bass population, both smallmouth and largemouth, is largely attributed to the TVA authorities. Sportsmen have strongly urged keeping the water level of the lake up until after spawning is completed. Previously, water levels on Kentucky Lake were significantly dropped after bass had spawned but before the eggs were hatched.

This reservoir is a lot like many Pennsylvania lakes. The water color is reasonably clear but far from crystal clear. The locals once depended on level-wind reels and 3/8-ounce and larger lures almost exclusively, but the smaller baits that we use here in

Pennsylvania with open-faced spinning tackle have become increasingly popular and effective there.

North Carolina

North Carolina's Lake Wylie, near Charlotte, is typical of several Pennsylvania reservoirs in that it is rimmed with houses and boat docks. In spring, summer and early fall, boat docks provide great largemouth bass holding spots. There's shade from the sun. There are often pilings that are driven into the water for dock stability. Bass use these pilings either to rest or as predatory positions. Many boat docks use styrofoam for flotation. Styrofoam seems to retain oxygen. Otherwise why do styrofoam bait containers keep minnows healthy for so long? So the styrofoam can help keep bass at boat docks as well.

The key to boat dock casting at Lake Wylie or in similar Pennsylvania waterways is getting your bait back underneath. Use an underhand cast to skip your lure back under

sand Island area. Depending on the time of year, you could find both bass species gathering around weedbeds and bulrushes. Here I've cast to points and indentations in bulrushes that look exactly like the weed areas I've worked in Florida's Lake Okeechobee, and in several Pennsylvania lakes.

Try casting beyond such vegetation, especially the points, with something like a Rebel or Rapala-type plug. Then twitch and pop the bait enticingly into the bassholding water. Light jigs work well for this situation, as do a number of other lures. As local anglers use their imagination in Florida and the Thousand Islands of New York, so should you here at home.

Finally, float fishing a stream like Crawford County's French Creek can be as rewarding as floating Gasconade Creek in Missouri, the South Branch of the Potomac in West Virginia or the upper James River in Virginia. There are no big technique secrets. Usually small lures like jigs



The key to scoring on bass near boat docks anywhere you find bass is to get your offering back underneath the structure. Use an underhand cast to skip the lure under a dock.

Nick Sisley

the dock. Accurate presentations are required, because you often have only a 12-inch opening or less between the top of the water and the bottom of the dock. Larger topwater plugs work well for this, the size of something like a Zara Spook. So do plastic worms fitted with slip sinkers.

A third tactic is to rig a crankbait so it runs off to one side slightly. Then make your cast alongside the boat dock so the crankbait runs underneath, or make the plug bump into the piling. The noise and erratic action both attract and excite your quarry.

You may have been reading about the smallmouth and largemouth bass fishery at the east end of Lake Ontario, the beginning of the St. Lawrence River, the Thou-

and a few others can be dynamite. Stop often to get out of the canoe or john boat to wade and thoroughly cast to the best-looking eddies, pools and riffles. Relax and have fun.

It's great to be able to travel widely and fish the far-flung areas of the world for bass and bass-like species, but don't sell Pennsylvania waters short. When it comes to bass fishing, there's no question we have some of the best there is!

Pennsylvanian Níck Sisley has fished in North America, Central America, South American, Europe and Africa.



by Darl Black

Plastic worms and bass complement each other like iced tea and lemon. No bass angler would consider going fishing without a few worms in his tackle box.

Plastic worms are one of the best artificials to catch largemouth bass, and they do a darn good job for smallmouth bass, too. Actually, the fake wigglers are far better than the real thing.

Even the softest plastic worms are tougher than nature's real ones. Artificial worms can be cast and chewed on without falling apart. The fake ones come through cover without tearing, last longer on the hook, and catch larger bass than real worms.

The worm has changed

The original idea for an artificial worm undoubtedly sprang from the fact that bass could be caught on nightcrawlers and red worms. Early rubber worms attempted to imitate the nightcrawler's size and shape.

Over the years the size, shape and color of artificial worms have changed, as has the manner in which the worm is fished.

Back in the late 1960s and early 1970s, it was easy to define just what was meant by "worm fishing." "Wormin" referred to using a stender, flexible plastic worm-shaped bait with a separate sliding weight, rigged either Texas style or Carolina style, and fished on the bottom. However, the innovations of the past 15 years have spawned variations of the traditional wormin' rig and methods of working it.

Today worms come in lengths from four inches to 10 inches, in both straight and twisted bodies. They are available with flat tails, paddle tails, short curl tails, and long snake tails. Some have wings or appendages, two tails and even pinchers like crayfish.

Suddenly it has become difficult to say precisely what is "worm fishing" and what is not. If a soft plastic lure looks more like a crayfish or centipede than a worm, are you still worm fishing? If you place a plastic worm or similar creature on a jig head, is the lure a worm or a jig? If you swim a worm several feet off the bottom rather than bumping bottom, are you still worming?

Traditionalists may disagree that many of the new innovative presentations are truly within the scope of worm fishing. However, anglers realized long ago that old style wormin' did not imitate a natural worm, but simply projected an image of something edible to a bass.

Angler differences in worm fishing are based on depth and cover situations, plus personal preferences and success with a particular technique. You only have to fish with different anglers to see some of these variations.

Traditional approach

Dave Lehman has been fishing worms for over 20 years. Lehman is pretty much a traditionalist when it comes to plastic worm fishing, confirmed by the fact that up until a few years ago he still used the term "rubber worms."

"I'm not too particular about the rod and reel as long as it is a graphite casting outfit," Lehman said, "but I want to have 17-or 20-pound-test on the reel because I rip the line hard when I set the hook. On the end of my line you will usually find a seven-inch worm, sometimes a six, and once in a while an eight-inch worm. Mann's Augertails and the Galida Rib Wormz are my favorites. Color is either black or purple. I like a 3/0 worm hook in a straight style, like the Eagle Claw 95JB. I don't use the rotating styles of worm hooks."

Lehman uses only one size weight no matter what the conditions. A 5/16-ounce slip sinker is the standard he never waivers from because "it gives me a uniform feel of the line and worm." Unlike the popular procedure of preventing the weight from sliding, Lehman never pegs the sinker to the line.

"I throw for a pocket or weed edge and try to let the worm sink as straight down as possible. I'll let it lay there for hopefully three or four seconds, if I have that much patience, and then move it a little bit. Usually after one or two hops, I reel in and throw again. I seldom work it back to the boat."

The maximum depth Lehman fishes a worm is 10 or maybe 12 feet. If he must fish deeper, he switches to a jig or other type of lure.

Fishing deep

Jerry Swidinski has a different opinion on the depth to fish plastic worms.

"I'm not a shallow-water fisherman," Swidinski told me. "Perhaps I should be. But on some of my favorite lakes, such as Lake Arthur, I start fishing worms in eight feet of water usually over brush piles, and on some points I may work worms to depths of 18 or 20 feet."

Swidinski generally rigs his worms Texas style, although he sometimes "fools around with the Carolina rig." Unlike Lehman, Swidinski is specific in his choice of worming outfit. He prefers a Fenwick 5- or 6-power rod, Garcia 5500C, and 12-pound Trilene XL line.

"If I'm fun-fishing, I use a Mustad 2/0 or 3/0 worm hook in a four-inch and six-inch worm, respectively. If I go to an eight-incher, I move up to a 4/0 Eagle Claw. However, if I am fishing a tournament, I always use a Tru-Turn." He explained that the Tru-Turn hook is more effective in achieving a good hookset, but too often small bass end up hooked right under the eye due to the rotation of the special offset hook in the mouth of the fish.

"One important thing I have noticed over the years is that bass in natural lakes seem to like big worms while reservoir bass prefer smaller worms. If I fish an eight-inch worm it will be a Mann's worm. If I use a six-incher, I use a Galida's Rib Wormz. And as for color, the worm will be black, grape or motor oil."



Swidinski, like Lehman, never pegs a sinker to the line because "pegging a sinker causes line twist."

Line twist

Another long-time worm fisherman, Bob Hornstrom, has switched from the Texas-rigged worm to a jig worm in an effort to eliminate twisting of the line. Hornstrom targets bass holding in vegetation and does not know the meaning of light line. A heavy action rod and 20-pound Stren is his standard outfit.

"In the past, I fished the Texas weedless rig and pegged the sinker with a toothpick because you got a better fall," Hornstrom said. "That way the worm stayed tight to the weight and did not get hung up on weeds while the slip sinker dropped to the bottom. But pegging the sinker twisted the line, especially when using ribbon-tail worms.

"A few years ago I tried fishing my favorite seven-inch Culprit worm on 3/8- and 1/2-ounce rubber-skirted jigs. This seems to have two benefits. It reduced line twist, and I consistently caught larger bass than my boat partner.

"Color? Do they make anything other than red-shad?" Hornstrom said.

Variety

Jerry Hanna, a Pennsylvanian participating in national bass tournament circuits, fishes plastic worms in a variety of ways.

"The Texas rig is most practical when fishing heavy cover, but I find myself using variations of the Carolina rig more and more under certain situations," said Hanna.

"Working a Texas rig on the bottom is a slow process. When the bottom is relatively clean, I prefer to use a worm rig that can be fished quickly.

"Carolina variations may be fished by constantly reeling.

You retrieve at a speed so the sinker does not lose contact with the bottom. The worm is swimming on the leader just inches above the bottom."

The splitshot rig is one variation of the Carolina rig that Hanna uses in the shallows of clear-water lakes. He uses a medium-light spinning outfit with six- or eight-pound Bagley Silver Thread line and a four-inch super-soft worm rigged on a 1/0 thin-wire worm hook. He crimps a large splitshot on the line 18 to 24 inches in front of the worm. He simply reels slowly, maintaining contact with the bottom with the splitshot while the worm swims free.

"If fishing deeper water over points and humps, or on sandy bars in river currents, I go to a more traditional Carolina rig with 12-pound line, a heavy sliding sinker, a swivel as a sinker stop, and a four-foot leader with a four- or five-inch thin worm with small hooks. This is a modified Chancellor do-nothing rig. I use a pre-rigged Touchdown worm that has two size 2 hooks."

The rod must be 7 to 7 1/2 feet to cast the long leader between the sinker and worm. The colors of these worms should help provide the illusion of baitfish, so smoke, avocado, chartreuse, light purple or clear sparkle are generally used instead of dark, solid colors.

Hanna explained that both techniques let the angler cover territory rapidly. Although these worming techniques are sometimes compared to crankbait fishing, by keeping the sinker in contact with the bottom, you are more certain of constantly being in the fish zone—something that most crankbaits cannot accomplish.

The pickups from bass when using these tactics are rarely hard strikes, Hanna said. Generally there is just a heavy feeling or slight line movement to the side when a bass takes one of these worms. Use a sweeping hook set so you don't tear the smaller hooks out of the fish.

Of course no bass has ever seen a worm that looks like some of today's creations! This goes to show how far we've progressed from the rubber worms of the 1950s that originally were intended to imitate the real thing. A Lake Arthur bass (below) went for a typical Pennsylvania worm-fishing setup—a 6 inch worm, 3/0 hook and a 3/8-ounce sinker.





Finesse

For situations requiring finesse, I vote for a four-inch Slider worm on a 1/8-ounce Spider head fished on spinning gear with six-pound line. The soft worm is rigged Texas style on the special leadhead. It can be crawled along the bottom or slowly retrieved inches off the bottom. However, this worm really comes on strong when used as a drop lure or a mid-depth swimming lure for suspended bass.

The small Slider worms and lightweight jighcads are an excellent choice in clear water when fish are skittish, or during high-pressure weather systems, which tend to turn bass off, or on waters that receive a lot of fishing pressure. As for Slider worm color, pumpkin pepper, smoke chartreuse and grape were hot last season for both smallmouth and largemouth bass.

When it comes to heavy vegetation, I fall in line behind those using a Texasrigged six-inch worm on a 15- to I7-pound-test line. For a number of years I had been inserting a small worm rattle into the worm, and I often fished the worm on the bottom simply by shaking the rod tip.

)arl Rlack



message similar to crayfish. But rattles are expensive and easily lost when a fish attacks the worm.

This year I borrowed from the doodling technique popularized on western lakes. Instead of inserting a rattle, I now thread a glass bead on the line between a lead slip sinker and the 2/0 Tru-Turn worm hook. Now when I shake the bait, the glass bead and bullet sinker click together.

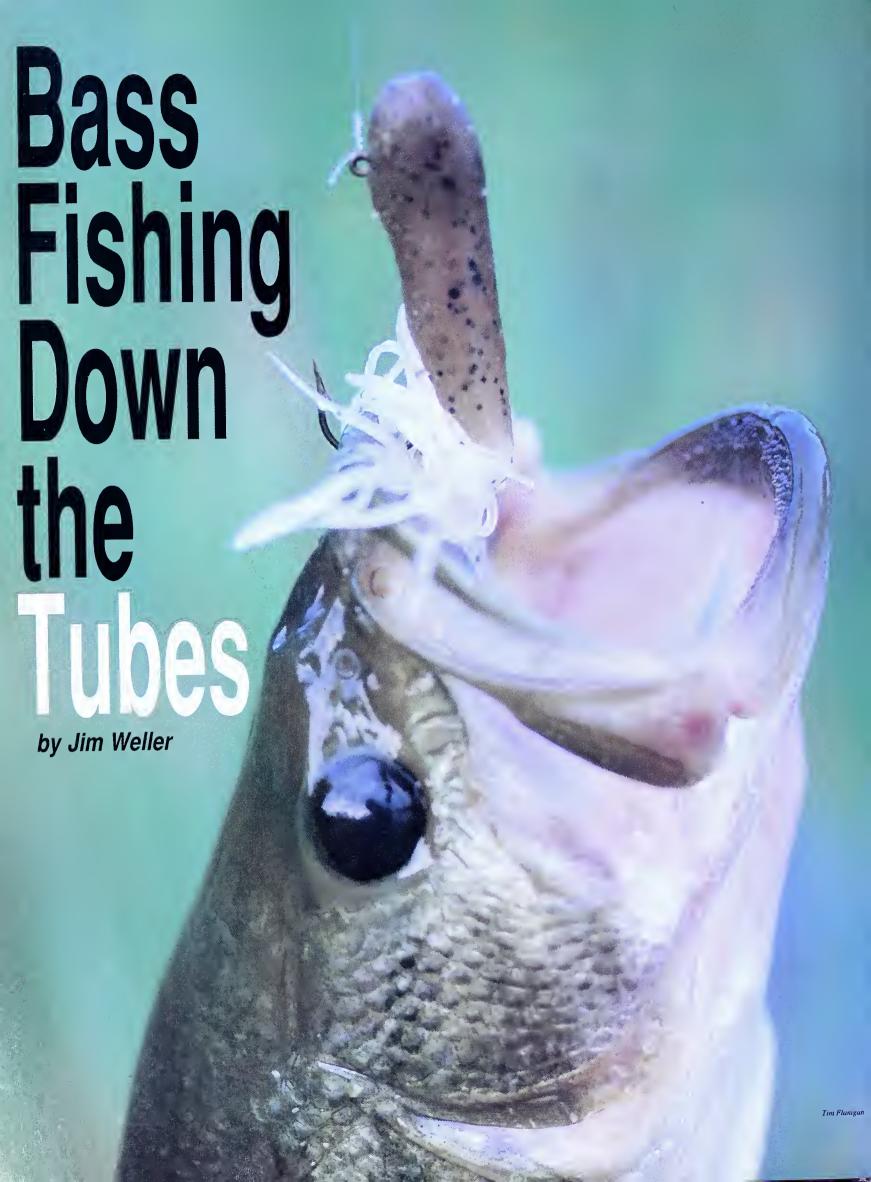
Of course, I could no longer peg the sinker. But there is a remedy to this. Use a bobber stop on the line about 3/4inch above the bullet weight. Preventing the sinker from sliding up the line when a bass picks up the worm provides a better hookset.



Momms ara varsatila because they lwres **SERVICE SERVICE** MEDY वर्षाच्या व that bass ලාදුමුල්දිගුණුමුල feed on.

Worms are versatile lures. Depending on the action imparted by the angler, and the time and place it is fished, a plastic worm can represent a multitude of aquatic creatures from bottom-dwelling critters to baitfish—all of which are sought by bass as food.

We have come a long way from the stiff rubber worms of the 1950s. The concept of worm fishing has expanded in recent years and will likely continue to undergo alterations in the 1990s. But it still will be "wormin" to bass anglers.



Is there a fisherman who wouldn't like to get his hands on that perfect lure that catches fish all the time? A lure like that simply doesn't exist, but there is one that has saved many trips for me, and it's taken the fishing world by storm. I'm speaking of the "Gitzit."

Originally brought out by Bobby Garland of Bass 'n Man Lures and called the "Fat Gitzit," the term has become generic to include all large tube-type lures. Current makers of these overgrown crappie lures include Bass Pro Shops, Cabela's, Bumble Bee, Lucky Strike and practically every company that has a line of plastic baits. Names like Tube-U-Lure, Jigzits, G-2s and Bassits are given to similar products, but when fishermen talk about them, they're simply "Gitzits."

Available in lengths from 2 1/2 to five inches, Gitzits come in a large variety of colors. They look like overgrown tube jigs used in crappie fishing. Most of them are about as big around as your pinky.

Depending on how they're fished and the color used, Gitzits look like either minnows or crawfish. In the western U.S., they were originally used with light line of six- or eightpound test and special heads developed by Garland. Pennsylvania bass fishermen have, for the most part, copied those western techniques, and they are finding that bass love them.

Colors, weights

These soft-plastic lures come in almost as many colors as plastic worms. Pennsylvania largemouths are almost always shallow fish, with the majority taken at 10-foot depths or less, and much of the time from fairly clear water. Colors such as clear salt & pepper, clear blue flake, smoke salt & pepper, and smoke red flake are shad and shiner imitators. Pumpkinseed, appleseed and a host of others imitate crawfish when hopped along the bottom. All these take largemouth and smallmouth bass from Pennsylvania waters.

Although a ball jig head can be used with Gitzits when bottom-hopping them, I prefer to use jig heads designed for the lure. There are four that I'm aware of. The first is the original head from Garland's company. These give the lure a spiraling descent. When popped off the bottom, they let the lures dart from side to side. The second has a smooth, cylindrical head-weight to allow easy insertion inside the tubular body, but it doesn't give the lure the spiraling effect. Another is made by Stanley Jigs. It features a wire weed guard with a change in the angle of the hook eye. Last is the

"backloader" head, which is inserted from the front end and has a tapered weight.

Whichever you choose, one common denominator is the use of a light-wire hook, about size 2/0. Many times, when the lure becomes snagged, it can be retrieved by pulling hard and straightening the hook. Bend the hook back and you're right back in busi-ness.

Terminal tackle

The Gitzit is essentially a light-line lure. To fish one requires the use of spinning tackle, and the more sensitive, the better. The newer small-diameter co-polymer lines such as Silver Thread or Magna-Thin work well with these. They allow you to use slightly heavier line for added strength while retaining limp properties. Any quality spinning reel will do the job, and an effective drag system is essential.

There are also times when a baitcaster with heavier line works, too.

Lake Erie smallmouth bass love the Gitzit. I favor quarter-ounce heads for water up to 20 feet deep. Three-eighths-ounce heads are available, and it's worthwhile to carry a few of these when fishing deeper or when the wind is blowing. The heavier weight allows you to maintain contact with the lure much better under those conditions.

If the smallies are feeding on minnows, a simple swimming retrieve with an occasional snap of the rod works wonders. If you want to imitate a crawfish, the best technique is to let the lure settle to the bottom. Then pop it up about six inches and let it settle back. The fingers on the lure pulsate and do the attracting.

The same retrieve works on largemouth bass. Many times, a fish will pick up the lure if it's just left to rest on the bottom.

The skip cast, once mastered, is absolute dynamite for largemouth bass. One



of the most popular spots for Pennsylvania anglers to fish is a boat dock. This allows you to put a lure into the farthest corners, underneath the dock where the big ones live.

Skipping is best accomplished by using the sixteenth-ounce head. Firing a low trajectory cast causes that piece of plastic to skip like a flat rock. The amount of distance you can get can be considerable. This cast imitates a shiner jumping along the surface, and can be very attractive to bass.

It also works wonders when you can see minnows chased by feeding fish. I always have a rod rigged with a Gitzit, and when I see jumping minnows I pick it up and put a skip cast right where they're active. Many times this results in a strike.

Sharper than sharp

Remember that these jig hooks must be sharper than sharp. Smallmouth "thump" a Gitzit, but you won't feel many strikes at all. A largemouth just inhales the lure as it spirals downward, but you may never know it until you get that mushy feeling on your line.

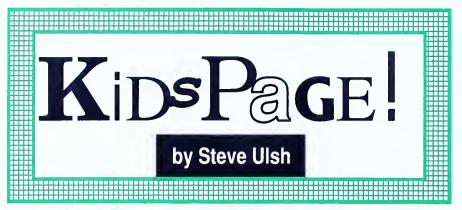
Never slam a hook home with light line. Instead, pull on the rod and let the sharp hook do the rest. Some people look at me in an odd way when they see me fishing boat docks with light tackle, but because I don't have to "cross his eyes" to strike, I don't find that a problem. I've had the same largemouth hit a Gitzit on five consecutive casts before I hooked him. Such is the attraction of this lure.

The latest technique for these lures is to rig them the same way as a plastic worm. You can use regular worm hooks and slip sinkers, or heads that have the weight molded right onto the hook. Here you can use your baitcasting tackle or flippin' stick and work it the same as a plastic worm.

I prefer to use a stiffer spinning rod with 10-pound line and "pitch" it just a few feet with an underhanded lob. I've seen bass pick this rig up and swim around with it in their mouths, refusing to drop it until I set the hook.

This rig works beautifully in weeds. Dropping a Texas-rigged Gitzit into holes in the weeds and dancing it in place can be productive.

Finally, I like liberal doses of fish scent on Gitzits. If you're fishing the minnow colors, use either shad or wild shiner scent. Use crawfish scent if you're using the darker colors. Gitzits are dynamite in all Pennsylvania waters, and if you're not fishing them, you're missing out on some action.



Largemouth or Smallmouth? How You Can Tell

Largemouth and smallmouth bass are two of the most popular gamefish in Pennsylvania waters. Generally, largemouth bass live in lakes and smallmouth bass live in rivers and streams, but not

always. Some anglers can't tell them apart, but there are differences.

Here are some ways to distinguish between them.

Mouth shape

The mouth of the largemouth bass extends past the eye. The smallmouth's mouth extends only to the middle of the eye pupil

Dorsal fin

The front portion of the largemouth's dorsal (top) fin is almost separated. The smallmouth bass has one continuous dorsal fin.



Body striping

The largemouth bass has a horizontal (lengthwise) dark stripe from gill to tail. The smallmouth bass has vertical (up and down) bars.

Note: Markings may disappear on older bass.

Color (not always a true test)

Largemouths are generally greenish in appearance. Smallmouths range from brownish to bronze. Smallmouths are sometimes called "bronzebacks."

illustration- Ted Walk

Pennsylvania's Biggest Largemouth and Smallmouth Bass:

How, When and Where Anglers Caught Them

by Art Michaels

In 1989, the Commission gave 183 senior and junior angler awards for largemouth bass catches. Here are the numbers caught in each month: January, nine; February, 18; March, 20; April, 14; May, two; June, 29; July, 36; August, 15; September, 16; October, eight; November, three; and December 13.

The biggest largemouth bass of 1989 weighed 8 pounds, 14 ounces. It measured 22 inches long with a girth of 20 inches. Sandra Alkins, of Folsom, PA, caught it in Brady's Lake, Monroe County, on August 1. She caught the bass on a worm.

Minnows accounted for 71 largemouth bass, and worms fooled 21. Crankbaits took 27, jigs caught 22, plastic worms deceived 20, and spinnerbaits hooked 10. Spinners accounted for seven, buzzbaits duped four and a spoon tricked one.

Here are the 1989 top-producing Pennsylvania largemouth bass waterways with their numbers of citation-sized fish caught: Lake Arthur, 39; Lake Ontelaunee, nine; Pinchot Lake, Pecks Pond and Lake Wilhelm, seven each; Glendale Lake, five; Susquehanna River, Sylvan Lake and Marsh Creek Lake, four each; and three each from Raystown Lake, Middle Creek Lake, Lake Jean and the Delaware River.

Smallmouth bass

In 1989, the Commission gave 177 junior and senior angler awards for smallmouth bass. Here's the monthly breakdown: January, none; February, one; March, nine; April, 10; May, 40; June 19; July, 28; August, 15; September, 10; October, 39; November, six; and December, none.

The biggest bronzeback of 1989 weighed 6 pounds, 9 ounces. It nailed a shiner in Glade Run Lake, Butler County, on July 1. Joe Mushinsky, of Mars, PA, caught the smallmouth, which measured 22 1/2 inches long with a girth of 16 inches.

Minnows accounted for 46 smallmouth bass. Worms fooled 13, crayfish took four, leeches caught three and stonecats deceived two. Crankbaits caught 61, jigs accounted for 36, spinners got five and a spinnerbait caught one.

Here are the 1989 top-producing smallmouth waters with the number of fish from each: Lake Erie, 102; Susquehanna River, 35; Juniata River, four; Keystone Lake, Allegheny River, Allegheny Reservoir and Elk Creek, three each; Conneaut Lake, East Branch Reservoir, two each.

Are you an award-winner?

Complete details of the Fish Commission Angler Recognition Program are available in a four-page brochure. The publication includes information on state record fish, the Husky Musky Club, biggest fish of the year and angler awards.

For a free copy, contact: Publications Section, PA Fish Commmission, P.O. Box 1673, Harrisburg, PA 17105-1673. Please include a stamped, self-addressed business-sized envelope with your request.



State Records

Largemouth bass

The current state record largemouth bass weighed 11 pounds, 3 ounces and measured 18 inches long. Donald Shade, of Waynesboro, PA, caught it in Birch Run Reservoir, Adams County, in 1983.

Smallmouth bass

Larry Ashbaugh, of Smithton, PA, caught the current state record bronzeback. It weighed 7 pounds, 5 1/2 ounces and measured 23 3/4 inches long. Ashbaugh caught the fish in 1983 in the Youghiogheny River, Westmoreland County.

Anglers Currents



Kamerzel Named 1989 Conservation Officer of the Year

Last April, Thomas Kamerzel was named "Outstanding Conservation Officer of the Year" for 1989 at the Northeast Conservation Law Enforcement Chiefs Association meeting of the Northeast Fish and Wildlife Conference.

Kamerzel is a graduate of Kutztown University and Penn State. He began his Fish Commission

career in 1976 as a deputy waterways patrolman in Lehigh County. After successfully completing the course of instruction at the H. R. Stackhouse School of Conservation and Watercraft Safety in 1982, he was initially assigned to the Southeast Region before permanent assignment in Lebanon/southern Dauphin counties.

The "Outstanding Officer of the Year" Award is presented annually to the WCO whose law enforcement and related activities are considered to be the most outstanding in Pennsylvania.

Angler's Notebook by C. Boyd Pfeiffer

Don't slap hollow plastic lures on the water to clear them of weeds. Doing so can cause the lure to break just beyond the head, or split and be unusable.

One way to release snagged crankbaits is to hold the rod with the line snug and rapidly vibrate the rod in your hands. The secret is not to use force, but instead to use rapid vibrations that often shake a lure free.

Docks are ideal places to find big bass, with docks built on pilings far better than floating docks. Use an underarm cast to get a lure under the dock.

Use explorer baits such as spinnerbaits, buzzbaits and plugs to locate bass. Once you know or suspect where fish are, fish baits like worms and jigs with finesse.

When fishing with a partner, each of you should start with completely different lures. That way, when a fish hits, both of you can switch to the effective lure. This cuts down on trial-and-error fishing time

Spinnerbaits come with tandem (two) or single blades. Use tandem-blade spinnerbaits for surface and shallow fishing and single-blade models for fishing deep. The two blades help keep these lures on the surface.



Consider glow-in-the-dark paint when revamping deep fishing lures such as jigs and spinnerbaits. The glow-in-the-dark (phosphorescent) paints are ideal for fishing deep, at night or in muddy water.

To troll slower than your engine reasonably allows, use a large bucket trailed behind the boat on a short rope to create additional water resistance. Make sure that the rope cannot foul the propeller.

When wading in swift or deep water, always work sideways to the current to reduce water pressure. A wading staff helps, as does a stick picked up along the shore.

When starting to fish visible structure for bass, begin by casting to the outside of the structure and then gradually work to the inside of the structure. That way, you might get several bass. Fishing the middle of the structure might scare other bass, particularly if you hook one deep in the cover and have to fight it out to the boat.

Subdue largemouth and smallmouth bass by grabbing them by the lower lip. Bend the lip out gently. This action keeps fish quiet for removing hooks and for releasing them.

One main difference between largemouth bass and smallmouth bass is that largemouths have a pronounced dark stripe from head to tail. Smallmouth bass have vertical stripes. In addition, the jaw of a largemouth bass extends beyond the center of the eye. The jaw of a smallmouth bass does not extend beyond the eye. For more details, see page 28 in this issue.

illustration Rose Boegh



Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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On the Water Ou the Malei with Dave Wolf

The lake stands like a mirror before me. The lapping of the gentle wash against the shore reminds me of the Lab I left at home. I struggle to string the fly line through the guides, as an expanding ring draws my attention to the far shore. I feel the adrenaline rush immediately; the need to get there and cast to the fish hidden in the dark waters is strong. I temper myself, however, and with shaking hands tie the balsa wood popping bug to the end of my six-pound-test tippet.

I clamor into the canoe and take aim for the far shore and the place where the expanding ring evaporated into the calming flat waters. I try to remain calm. I try to feel the rhythm of my paddling. The canoe tracks beautifully, and I look back to see the footprints the paddle is leaving. But the far shore is too inviting; the ring of the rise is too tantalizing. I allow the canoe to drift into place and uncoil a cast that isn't half-bad under the pressure I'm feeling. The bug lands tight against the earthen bank and I allow it to stay there for a moment, before giving it a twitch that brings life to its rubber legs.

I remember no ducks on the lake, no blue sky overhead, no gentle breeze on my face. This moment, this small slice of life, has nothing other than a popping bug hovering over the spot where a fish has risen 15 minutes ago. There is nothing else to life during this period—no wife, no kids, no job, no car, no house payments. Now in this frozen second, there is only that fish and me; and for the first time today, I showed patience.

Another twitch and a writhing largemouth comes crashing upon my popper. I set the hook hard and the bass hangs in midair; my mind's shutter freezes the action long enough to see the mint-green stripe on its side and the white belly beneath. It's obvious that this bass is a large one, fat and sassy, tethered to my leader like a horse fresh from winter pasture and not ridden in months. The bass is finally coaxed to the boat and I admire it for a long minute before releasing it back to the waters where it first created the expanding ring.

Satisfied that decent bass reside in this pond of less than 100 acres, I carefully paddle along the shoreline and cast tight against the bank. With pleasure I find both smallmouth and largemouth there cruising the shallows or tucked under the vegetation, rocky ledges, submerged stumps and fallen trees that are now part of the lake. To me this is fishing at its best, but not all agree.

Flyrodding for smallmouth is nothing new. It just happened to get lost in the invention of spinning gear and baitcasting reels. Here in the East, tradition dies hard and most smallmouth anglers fish from canoes or john boats. The more dents you have in your craft, the more fishing you are presumed to do, which in turn makes you a better fisherman, even if you are not.

For the most part, the largemouth gained popularity in the South and the "southern boys" seek the largemouth with their fast boats, depthfinders and rods that toss crankbaits, plastic worms and jig and pigs, to name but a few of the assortment of lures found in their tackle boxes. They have, in a sense, made a game out of

Quiet Places

the sport; and bass tournaments have migrated north and are sponsored throughout the Commonwealth. Some of the better anglers actually make a living at it.

The traditionalists often scoff at those wearing jumpsuits, casting from metal-flaked, painted boats. Some heated arguments have arisen over the idea of bass fishing tournaments, high-speed boats and depthfinders. It at



Russ Gettig

times seems that the North and South's clashing of methods could create yet another civil war, but to date cool heads have prevailed.

To each his own, but I prefer the quiet waters of still ponds, and a fly rod with a popper attached. I love to see bass crinkle the smooth surface of quiet water. In the pamphlet *Let's Go Fishing in Pennsylvania Lakes*, the Fish Commission lists 198 lakes and ponds throughout the state where bass can be found. I find that statistic quite amazing if you consider that 100 years ago both largemouth and smallmouth bass were found only in the Ohio River drainage.

I prefer to fish for the smallmouth from a canoe or john boat and I prefer the small lakes where I can cast a small bug to a shoreline during the evening or on those cool overcast days that bring a greater promise of bass than sunny warm days. I like paddling my own boat; and I fish to escape the sounds of outboards and the smell of fuel. But electric motors will do; they run quietly, make it easier to handle the craft and save energy on days that I am just too lazy to paddle.

The sun slips into the envelope of the mountain as I tug the canoe onto the shore. A knot has risen in my shoulder from the long hours of casting and I rest a moment before laboring to fasten the canoe to the top of the car. On the far side of the lake an expanding ring is highlighted by the last ray of light. I am tempted for a moment to shove the canoe back into the water to make one last cast to the maker of the ring. I simply can never get enough of a good thing. But for a change, common sense prevails, for there will hopefully be more expanding rings in my life and many more opportunities to set my bass bug upon them. So I gather my gear, load the canoe and drive away, thankful that still water and all the quiet of such places still exist—and that there are bass to shatter the quiet with their explosive rises.



Pennsylvania The Keystone State's Official Fishing Magazine



Straight Talk

Regional Cooperation: A Winner for Pennsylvania



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

The Northeast Association of Fish and Wildlife Resource Agencies consists of 13 states and the District of Columbia. The fish and game agency director in each of these political jurisdictions serves as the voting member of the Association. In addition, six Canadian provinces are eligible for voting memberships, and regional federal fish and wildlife agencies and private fish and wildlife conservation organizations are eligible for affiliate membership.

The Fish and Wildlife Association's principle goals are to promote better understanding and cooperation, provide effective exchange of information, coordinate and integrate programs of mutual concern, and promote a high level of fish and wildlife administration.

The major undertaking of this group is sponsorship of the annual Northeast Fish and Wildlife Conference, which is designed to accomplish the regional goals of the association. The most recent conference, the 46th annual meeting, was held in early April in Nashua, New Hampshire. The conference, which attracts more than 500 participants, brings together five different interest groups that meet concurrently with the agency directors. They exchange information and promote cooperative and integrated fish and wildlife programs for the northeast region.

These groups include the Northeast Division of the American Fisheries Society, Northeast Section of the Wildlife Society, Northeast Conservation Law Enforcement Chiefs, Northeast Society of Conservation Engineers, and the Northeast Conservation Information and Education Association.

The northeast region is unique in the variety of natural resources it contains. It is unique in the many different, complex political structures within the member states and provinces. It is unique in the high level of manmade conflicts that adversely affect the region's environment, and it is unique in its huge resident human population.

Directors from the 14 principal members of the agency association meet annually during the conference, but it has become apparent that the fast-changing needs of the region's fish and wildlife programs require more frequent and active exchange of ideas, information and long-range program directions at the administrative level.

In response, the administrators of each member state have agreed to hold a two-day meeting in late September to concentrate on one of the most pressing administrative concerns shared by all regional agencies—the question of adequate long-range funding to meet mandated responsibilities to the fish and wildlife resources and to the public.

Past efforts of the northeast agencies have been very successful, and the commitment by key regional administrators to expand communications and improve exchanges of information is a major step toward progressive fish and wildlife management programs throughout the entire northeast region in future years. Pennsylvania will continue to benefit by its active participation in these cooperative regional efforts.

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Pennsylvania Fish Commission

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Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

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The covers

This issue's front cover, photographed by Wally Eberhart, whets the appetite of summer anglers, especially walleye fishermen. Inside this issue, too, is a feast of great fishing ideas. Trout anglers can taste success by boning up on the stories on pages 4 and 19. Walleye enthusiasts shouldn't miss page 14, and panfishermen can raise their scores on slabsides with the lowdown on page 22. "Must" reading for boaters begins on page 8.

This issue's back cover, photographed by Robert Garman, is all about reminiscing. Turn to pages 11 and 12 for two different stories of this kind. For the icing on the cake, check out page 28 to learn what to do after you've caught those fish.

Keyston Tricos by Charles R. Meck

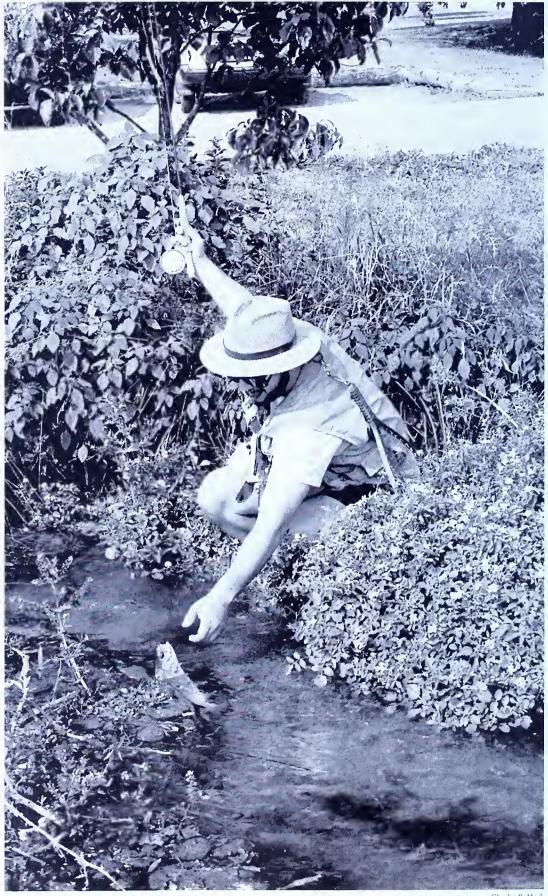
Vince Marinaro, Barry Beck, Dick Mills and I arrived carly at the fly stretch on Bowman's Creek near Tunkhannock. Dick and I told Vince the night before about a hatch of small mayflies that appeared daily there from mid-July to late September. He begged us to take him to see and fish the hatch the next morning. Duns of these mayflies usually appear on the surface from 6 to 8 a.m. In a few minutes to an hour or so, these duns turn into mating spinners. These diminutive spinners fall on the surface between 8 and 10 a.m., depending how hot the morning is.

The hatch is common on limestone streams, but this was Vince's first time to fish the hatch on a frecstone stream like Bowman's Creek. Although Bowman's Creek is productive, it is considered a typical freestone stream with little or no dissolved substances (such as calcium) and a pH near or just below 7. Limestone streams often have pH readings higher than 7.5.

All of us arrived at the fly stretch on Bowman's at 7:30 a.m. Vince became excited when he entered the riffle at the head of the Barn Pool. Thousands of small mayflics already formed above him in a mating cloud. He knew these spinners would soon mate and fall to the surface. Vince Marinaro was about to experience his first Keystone freestone Trico hatch.

Vínce tíed on a size 24 cream and dark-brown ímítatíon to copy the female spínner. By the tíme he had completed the clínch knot on the copy, several trout began feeding on the first spinners to hit the water. For the first half-hour, Vince used an imitation of the female spinner. The last half-hour he changed his pattern to one that copies the male spinner. Female spinners, after mating, lay their cggs and fall to the surface first. Shortly thereafter, male spinners also fall onto the surface spent. Trout continued to feed on the spinners for almost an hour.

Mike O'Brien lands a plump wild brown trout on a hot July afternoon. The Trico hatch has ended, but trout on some of the more productive streams can still be caught.



Charles R Med

Vince picked up only three trout during the spinner fall on Bowman that day. But more than that, he had experienced this famous Trico spinner fall on a freestone in Pennsylvania.

Pete Ryan lives in Coudersport. He's a dentist in the town—that is, when he isn't fly fishing somewhere in the state or nation. On his days off he sometimes travels to limestone streams in the Cumberland Valley to fish the Trico hatch.

Several years ago, Pete became frustrated with the Trico hatch, the discriminating feeding habits of the trout, and the unbelievable number of fly fishermen who appear on the streams for the hatch. He and several other expert anglers once fished this hatch on the Letort for an entire morning without any success. The next morning Pete traveled just a few miles from his Coudersport home and fished the same Trico hatch on a Potter County freestone stream. Pete lost count of the fish he caught after his 20th trout—all taken on a Trico pattern on a cold freestone stream—and all wild trout.

Tricorythodes

Many fly fishermen call *Tricos* any one of several small mayflies (3-5 mm) that scientists have grouped under the Genus Tricorythodes. Hatches most often appear on streams with little canopy above. This open area above the stream allows the spinners to perform their mating ritual.

Male duns usually appear around dawn. These dark-brown duns fly to a tree or other vegetation and wait for the female duns to appear. Around 7:30 a.m., female duns emerge.

On some occasions, especially on limestone streams, you'll see trout taking emerging nymphs and duns resting on the surface. A pale-olive imitation of the dun works well if you arrive on the stream early.

Both male and female duns change to mating spinners and form a ball over the stream. It's often difficult to locate this ball of male spinners because of their size. It helps to locate the mating swarm by looking toward the sun (toward the south or southeast in the morning). The density of the spinner flight can vary from riffle to riffle, so it's important to explore as much of a stream as possible. Females fall first onto the surface followed by many male spinners.

On warm summer days the spinner fall might last for less than a half-hour. On cool mornings in September the spinner fall might not occur until 10 a.m. or later.

Many of us have experienced the Trico

hatch on Falling Springs or one of a dozen or more limestone streams in central Pennsylvania near State College, the Cumberland Valley, or the Lehigh Valley. But until a few years ago, fcw anglers ever realized that northern Pennsylvania freestones held the Trico hatch. Recently fly fishermen have reported Trico hatches from the Delaware in the northeast to Thompson Creek in the northwest.

Fishing pressure on many freestones that contain Trico hatches is meager. The Trico hatch often doesn't get the respect it deserves on freestones. On an average day on limestone waters like Spring Creek in Centre County or Falling Springs in Franklin County, you might have difficulty locating an area to fish. Not so with most freestones that hold the hatch.



Mid-summer problems

However, fishing the Trico hatch on freestone streams does present some challenging problems in mid-summer. Two immediate concerns are the low water levels and elevated water temperatures you often find that time of year on freestone streams.

For example, the Loyalsock holds a respectable Trico hatch near Hillsgrove. I've fished the hatch on several August mornings with water temperatures near 70 degrees. Occasionally a solitary trout rose, but water temperatures weren't conducive to a great rise to the spinner fall. Had I known that Elk Creek just three miles from the Hillsgrove area and the lower half-mile of Hoagland Branch held the same Trico hatch, I could have fished over trout rising in cooler water.

Mid-summer low water on freestone streams forces anglers to use a 10- or 12-

foot leader with a 5x or 6x tippet. Even with a leader that long you'll scatter many feeding trout on clear, low, mid-summer freestone streams. If the spinner fall is heavy enough and trout feed consistently on the fallen spinners, they'll often be less frightened and easier to catch on an imitation. Don't forget—you'll often have to present a low profile on many of these low-water freestones when the Trico hatch appears.

I've had many anglers tell me they saw fantastic swarms of Trico spinners in the air but never once saw them fall onto the water. Many anglers confuse the Trico hatch with another similar hatch, the Blue Quill, which appears at the same time of year on trout streams. Elk Creek near Millheim in Centre County has a heavy Blue Quill hatch (Genus Paraleptophlebia) in July and August. Travel up through the narrows on this limestone stream and you'll likely see thousands of small spinners undulating above the stream and road. This section of the stream holds a fantastic Blue Quill hatch, but no Tricos.

Harvey Trico imitations

George Harvey is the dean of fly fishermen in the United States. George taught fly fishing to more than 50,000 people while he was professor in residence at Penn State University. He has studied and fished Trico hatches for more than 50 years. He tied his first pattern to match the hatch and spinner fall in the early 1930s. He still uses the same pattern to copy the dun that he tied in 1936.

But George is always experimenting with new tying techniques and new patterns. Recently, George created a new imitation for the male and female Trico spinner. Anglers now appropriately call these latest patterns Harvey Trico imitations. The Harvey Trico includes several strands of crystal flash in the spent wings. These shiny wings make the spent spinner much easier to follow on the water.

In another month the Trico will appear on many freestones streams in the state. I've listed 23 such streams that contain hatches that range from sparse to heavy. You'll find many of these streams in the northern half of the state. Check the sidebar on page 6.

Telltale signs

These aren't the only freestone streams that contain the hatch. More are waiting to be found. To find out if your favorite water contains the hatch, visit it on an early August morning. Look for the hatch in the air about 10 to 20 feet above the stream.

Patterns

Trico Dun

Thread: Olive (female); brown (male)

Tail: Pale olive

Body: Pale olive poly dubbed (female); dark brown (male)

Legs: Cream

Wings: Pale gray hackle Hook: Size 24 Mustad 94840 **Harvey Trico**

Thread: Dark brown

Tail: Moose mane (male); short cream fibers (female)

Body: Very dark brown fur or polypropylene (male); three turns of cream fur or poly in the rear, then dark brown in front (female)

Wings: White poly yarn mixed with several strands of sparkle yarn

and trimmed to size Hook: Size 24 Mustad 94840

Spider webs at bridges crossing the stream also reveal the hatch, especially if you visit a stream in the afternoon or evening. Several years ago, Dennis Renninger and I visited Hoagland Branch above Hillsgrove one early August evening. As I checked spider webs on the bridges crossing the stream, I noticed a Trico spinner caught in the web.

What was this species doing in this mountainous freestone stream? Was it a stray up from the Loyalsock?

I delayed my next-day trip to Wilkes-Barre to see if the hatch truly existed on Hoagland. I arrived a half-mile upstream from Elk Creek at 8 a.m. As I peered upstream in a narrow opening in the canopy, I saw thousands of spinners—on the lower end of Hoagland Branch. Water levels on Hoagland that time of year were extremely low.

I tied on a female Trico spinner and waited at the tail of one of the many 20-foot long, three-foot deep pools formed from water surging through giant rocks. Shortly a few female Trico spinners appeared on the surface. A single brook trout took up a feeding station. Soon another small trout joined the first. A six-inch brook trout took my pattern on the first cast. The second rising trout took the imitation several casts later.

Get ready for the upcoming Trico hatch on freestones this year. Select a stream to fish with cold water and an ample supply of trout. Take along a long leader and a fine tippet. Plan to be on the stream you've selected by 7 a.m. in case the hatch appears early. Schedule your trip in late July, or better yet, in early August when this species appears at its greatest numbers. Make certain you've selected a stream with temperatures in the 60s. Take plenty of imitations with you and sit back and wait for the hatch and spinner fall to begin.

If you follow all these recommendations, you, too, wi!l likely experience a Keystone freestone Trico.



Some Pennsylvania freestone streams with Trico hatches

- 1. Loyalsock Creek
- 2. Delaware River
- 3. Oswayo Creek
- 4. Allegheny River
- 5. Slate Run
- 6. Thompson Crcek
- 7. Caldwell Creek
- 8. Bowman's Creek
- 9. Cross Fork Creek
- 10. Kettle Creek
- 11. East Fork, Mahoning Creek
- 12. First Fork, Sinnemahoning Creek
- 13. Hoagland Branch
- 14. Elk Creek (Sullivan County)
- 15. Loyalhanna Creek
- 16. Lackawaxen River
- 17. Pine Creek (Lycoming County)
- 18. Brodhead Creek
- 19. Cedar Run
- 20. Fishing Creek (Columbia County) lower half
- 21. Ninemile Run
- Bald Eagle Creek (lower end) has some limestone streams entering the main stem
- Cove Creek (Fulton County) lower half has some limestone entering main stem

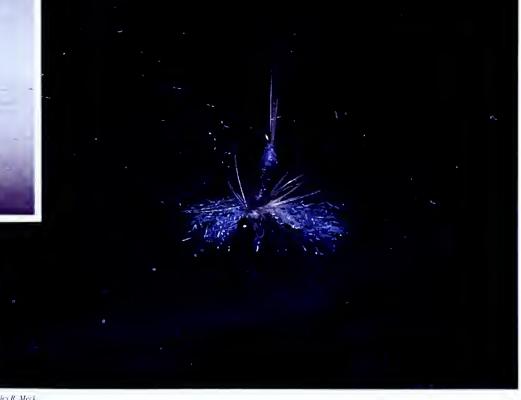






Schedule a trip in late July or early August, and choose a stream with temperatures in the 60s.

Mid-summer low water on freestone streams forces anglers to use a 10- or 12-foot leader with a 5x or 6x tippet. Even with a leader that long you'll scatter many feeding trout on clear, low, mid-summer freestone streams.



Charles R Meck





Art Michaels

Steal Your Boat

by Art Michaels

If you give me a few minutes, I'll steal your boat, outboard motor, trailer, prop, electronics, fishing tackle and other expensive items.

Let's check your rig and I'll show you what I mean.

First, do you lock the trailer coupler to the tow vehicle's hitch ball when you travel?

No? I wait until you launch your boat during the wee hours of the morning. The launch site is most often deserted. I drive up next to your tow vehicle, lift the trailer coupler off the hitch ball and put it onto mine. Then I drive away scot free with your trailer. It'll be hours, maybe even all day, before you discover the loss and probably longer until you can reach a phone to notify the police. In that time, I'm long gone with your trailer.

Suppose you do lock the coupler to the hitch ball. I'll still steal your rig because most trailer boaters who use coupler locks forget one simple idea. Even with the coupler locked onto the hitch ball, I just use a box wrench to undo the nut that holds the hitch ball on your hitch. Then I put it onto my tow vehicle hitch, lock and all, bolt it tight and I'm off.

I might also undo the bolts that hold the coupler assembly to the trailer tongue. In this way I'll rip off your trailer while you're on the water. But if your rig is sitting in your driveway or some other place, I'll take everything—your boat, motor, trailer, electronics, tackle and everything else aboard.

If you want to make stealing your trailer hard for me, use a coupler lock to secure the coupler closed onto the hitch ball, and tack weld the threads on the end of the hitch ball's bolt. The lock makes lifting the trailer tongue difficult, and I can't easily remove the nut on the hitch ball stem except by grinding off the weld.

You should also tack weld the threads of the bolts that hold the coupler assembly on your trailer tongue. This prevents my removing the coupler assembly and placing it onto another trailer tongue.

Storage

Consider where you store your trailered boat. Do you leave it in an unlighted driveway or in a sceluded parking lot? If your rig were lighted from a streetlight or stored in a busy, accessible spot, I might look elsewhere.

On the other hand, if you can store your trailer in your backyard out of plain sight, and perhaps even cover it, I'd probably pass it by.

You could also disable your trailer to prevent my driving away with it. Remove one wheel and prop up the wheel-lcss axle, or run cable through the wheel rims and around the axle and lock the two cable ends together. This strategy prevents the trailer wheels from moving.

You might also want to store your boat in a commercial storage facility. I can't get at it there as easily as I can elsewhere.

Do you rent space at a marina? One of my favorite ploys is simply to tell the watchman that I'm your brother and I need to move the boat. You can prevent my stealing your rig this way by leaving instructions with the storage operation management that only you are allowed aboard the boat or to give orders to move it, and under no circumstances can someone else do this. If someone tries, you should tell the watchman to call you immediately.

Confirm these instructions in writing.

I'll also get your trailered rig by waiting until you break

down on the highway and leave your trailered boat at the side of the road. You might cause a casual thief to think twice about taking your rig if you use a lock that covers the coupler cavity completely. But professionals like me know how to defeat these locks in seconds.

Remember also that one modus operandi is to undo the bolts on either the hitch ball or the coupler assembly. So even if you use a lock, if the bolts on the hitch ball or the coupler assembly aren't welded, I'll still take your rig.

I'll also jury rig my car trunk to accommodate your trailer tongue so that I can get away with your trailer, even though you've locked the coupler cavity and tack welded the bolts.

You could dissuade mc from taking your rig at the side of the road by removing one wheel and propping up the axle, or by using cable to lock the wheels.

The best way to prevent my stealing your trailered rig at the side of the road is never to leave the rig unattended. This means always trailer your boat with a partner or two. One of you can get help and direct a tow vehicle operator to your rig's location; the other stays with the trailered boat.

Then, if your tow vehicle breaks down, have the serviceman tow your vehicle by itself to the garage, and then return to get the boat. Towing your car with a trailered boat can be done, but it's dangerous.

Outboards, props

I'll bet I could also rip off your outboard motor, especially if it's smaller than about 15 horsepower. Motors like these are the easiest to steal because they can be carried by one person.

If you think those locks for the clamp brackets keep your motor safe, guess again. On many engines all I do is remove the long bolt that holds the motor to the clamp bracket. Then I just lift the motor and you're left only with the locked bracket.

Look closely at your small outboard and its clamp bracket. See if locking the bracket or the bracket handles actually prevents the motor's theft. If you're not sure, ask your dealer. If I can heist the engine and leave the clamp bracket, I will.

If you don't want me to steal your small outboard, remove it from your boat and take it in your house or put it in a locked garage.

I can also get some good money for your prop, especially if it's stainless steel. In about 30 seconds (and I'm slow) I can remove your prop and be gone.

All it takes to prevent my stealing your prop is a simple lock that fits on the engine's propeller shaft. The prop can't be removed without undoing the lock with a key, but you can still run the motor. Similar locks are available for props on inboard/outdrive units.

Electronics

Ripping off your VHF radio, depthsounder, loran C, compass and other small, expensive items is easy, too. I wait in the parking lots of fast-food places and other spots where trailer boaters stop. When boaters get breakfast or coffee, leaving no one with their trailered boats, I go to work.

You're easy prey in this situation because it's likely hours until you discover the loss, and in some deserted areas, you surely don't expect me to be lurking. Then you and I are miles apart, and you may not even be sure when or where the theft actually occurred.

Preventing my victimizing you this way is easy. Never



Art Michaels



These kinds of locks (above) can dissuade a casual thief from heisting your trailer. Know you boat's HIN (left) and all your equipment serial numbers.

Art Michaels

leave your trailered rig unattended while on the road—and I mean *never*, not even for the quickest coffee break or fuel stop.

In addition, keep your equipment out of sight while traveling. If your boat has lockable storage, use it. You might also want to leave your electronic gear and other expensive belongings locked in your car trunk until you launch your boat.

Some boat manufacturers now include removable storage boxes in their new models. You mount your electronics in the boxes, and when you leave the boat you remove the boxes. Consider also building similar storage areas in your boat.

If I can't see a compass or depthsounder to steal these items quickly, I'll seek easier prey. I often go elsewhere when heisting an item requires more than a few minutes.

Victims help me a lot, though, in ensuring that law enforcement agencies cannot recover stolen items. You prove again and again that my crimes pay. Without looking at your equipment, in a few minutes can you come up with the serial numbers of your boat, motor, trailer, loran C, VHF radio, compass and depthsounder?

Knowing these numbers is vital to getting your gear back. Record these numbers on two lists. Put one in your wallet; leave the other at home. If you ever need these numbers fast, you'll have them.

Many law enforcement agencies will inscribe your electronics and other valuables for free with your name and other identifying marks. If I rip you off, the markings increase the chances of your getting your gear back.

Don't forget your tow vehicle. Lock it every time you leave the vehicle, no matter how brief your stop may be, and keep your valuables out of sight.

Finally, I benefit when you think that it's always the other boater who becomes a victim of theft. You keep believing "It can't happen to me" and I'll get to your boat soon enough.

So much for this free advice. Our chat is over and the truce ends here, too. All in all, implementing these measures probably won't stop a professional thief from ripping you off. But ignoring these ideas is surely asking for trouble. The next time I check out your rig, it might cost your dearly.

Black Moshannon Ghosts

by Jeff Mulhollem

The rain swept across Black
Moshannon Lake in angry, hissing
sheets that slapped the truck windshield
so viciously it left my young son wideeyed. A jagged blue bolt of lightning
pierced the leaden sky and a crash of
thunder rocked the vehicle on its stiff,
four-wheel-drive springs. We had left
the water just in time.

"When will it stop, Dad?" The wethaired little boy asked, still wincing from the thunder. He peered out at our beached canoe 25 feet away. "Will the boat fill up with rain?"

After I told him the rain would probably stop soon and the canoe was fine, he thought for a few minutes before asking, "Do the beavers come out in the rain? Are they afraid of the thunder and lightning, too?"

He had me there. So I said I wasn't sure and turned on the defroster and the radio. We sat there listening to hopeful weather forecasts and music for a half-hour or so, trying to remember what we had left out to get wet and ruined at our state park campsite a mile or so away, and waited for the downpour to let up.

When the rain stopped and the sky lightened, we had to dump several inches of water out of the eanoe. While I put the electric motor, battery, tackle box and rods back in, the man who had been fishing for eatfish from a nearby dock eame over to talk. My son threw rocks into the lake.

The man said he was from Philipsburg, about nine miles away, and had been coming to Black Moshannon for four decades. "It hasn't changed much over the years," he said, looking out over the shallow, weedy lake, which was now partially veiled in mist. "I never catch a lot," he added, "and all my friends ask me why I keep coming back. But I just like it."

As I strapped the brightly colored child's flotation vest on my son, the man watched with what seemed to be disapproval. "Yeah, my brother and his young boy drowned right out here in '54," he said, pointing toward the middle of the lake.

But it was still early morning, the lake was smooth and quiet, and it now looked like it would be a pleasant day. Besides, I had told my son we would catch some fish. So we headed toward the weed line on the other side. It turned out to be one of the best mornings of fishing I've ever had at Black Moshannon. By early afternoon, using Gitzits and jigs with twister tails, I caught a number of legal bass, three large pickerel and the biggest crappie 1 have ever secn. My son threw the bass back, felt the needle-sharp teeth of the chainsides and acted suitably impressed by the crappie his old man assured him was "huge."

illustration- George Lavanish

"Oh, I'm sorry," I replied, startled by the abrupt turn in our conversation. "How'd it happen?"

"They were fishing from a canoe, a 15-footer like yours, I believe," he said, matter-of-factly. "They eapsized and got tangled up in the weeds when they went in."

His words hit me like a gut puneh, although I tried not to show it. As I pushed off out of the shallows with a paddle, I considered turning the eanoe around; I no longer felt like fishing in the mysterious black depths.

We even caught a glimpse of a beaver swimming across the lake, unusual for any time except dusk. My little boy thought that was great! By all accounts, it should have been a perfect morning.

But I didn't enjoy it. I just went through the motions. I kept pieturing my son in the dark water, tangled in weeds. My day had been spoiled by the ghosts of a 35-year-old tragedy.

"Fishing's Great, as Always" by Sue Gerard

Let me tell you about a fisherman I grew up with. Actually, I should say "fisherperson," I guess. This fisherman was a woman whose childhood nickname was Billy. Her dad's hired men nicknamed her that because it was the name of her pet goat.

As a farm girl, Billy fished with homemade tackle. Her line was a twine string. Her sinker was a metal washer. She was born during the bent-pin era but had real, store-bought'n hooks. Billy carried several hooks, a couple of washers and a pocket knife in bib overalls.

As she walked through the woods, she'd hunt a dry stick and break off a stub that would float well enough to resist the tug of a 10-inch bullhead or a hand-sized sunfish. She'd tie that stick on the twine, about two feet above the hook. Her dad taught her that "two half hitches will hold the devil," so that's the way she secured the bobber.

She'd also cut a "rod" on her way to the creek. She'd choose a straight, green branch four or five feet long and strip it of its side twigs, whip it a time or two to determine where to cut off the limber end and then attach the line behind a bump so it wouldn't slip off the end of the pole. A Prince Albert tobacco can in the rear pocket of her overalls held barnyard earthworms and a little moist dirt. Sometimes the other hip pocket had a similar can, punched with nail holes, holding live grasshoppers or crickets.

In this creek at the back of the farm, only a few holes were deep enough to hide cats and sunnies. On hot summer days, though, she could entice those fish to come out from under big rocks or from beneath heaps where trash had collected around the roots of overhanging trees. That made for lots of hangups and a few lost hooks, but she'd say, "There's better fishing where things aren't too perfect."

When Billy was 10, she was permitted to ride her bike down the gravel road two miles to visit her friend Elizabeth. Elizabeth occasionally rode a horse to fish with Billy and they spent some memorable hours fishing together.

At the first catch one girl would cut a flexible branch from a tree—one with a short "Y" branch at its thicker end. She'd strip the leaves off the stick and thread the small end of this improvised stringer past the fish's gill and out its mouth. The "Y" stub kept the fish from getting off the stick. She'd plop this "stringer" and fish into shallow water and put a big rock over the small end of the stick so that the fish couldn't flop loose. The next fish caught would slide down against the first one and so on until there were sometimes eight or 10 fish on the same stick.

After each catch, they'd thread a barnyard worm on the hook, spit on the worm for good luck and toss the line out, ready for the next fish to bite. The girls didn't know if the spit actually worked, but Billy said, "It can't hurt anything," and continued to spit. Like a couple of female Tom Sawyers, Billy and Elizabeth would rough-dress their fish and wash them in the creek. Then Billy's mom would finish the cleaning and the girls would sometimes build a fire in the backyard, fry and eat those fish, whether it was mealtime or not.

That was a long time ago, in the 1920s.

Her line was a twine string. Her sinker was a metal washer. She was born during the bent-pin era but had real, storebought'n hooks.

The nickname has been forgotten, but not the fishing. Evenings, that old woman sits in a metal lawn chair on the dock at a small lake behind the farm home where she and her husband have lived for most of their 52 years of marriage. Alone, she casts, working a surface lure around patches of moss and weeds in the shallows and near the place where willow tree roots grow into the water. She likes to send a black Jitterbug across the water and let it drop beside a big log that sticks out from shore.

The old gal has no urgency about catching fish. When a strike comes, she often gets as excited as if she'd landed a big one. "Meat on the table!" she yells, to no one in particular; it's just something her favorite uncle used to say when they fished together. But she's in no hurry to set the hook.

The bass that does get snagged is allowed lots of swimming time and freedom to leap and try to throw the hook. She actually smiles when one gets away! "Keeps my hands cleaner," she mutters to herself.

Sometimes, when a fish surfaces to get a bug, she hops out of that chair, winds her line in quickly and re-casts, quite accurately for an old gal, to the spot where the water was disturbed. And sometimes that pays off.

If she snags one that doesn't get off before she nets him, she climbs off the dock, goes down to the water's edge, dips one hand in the water and unhooks the fish. After admiring it for a few moments, guessing its length and weight, she lowers it into the water, gently loosens her grip and watches it slowly discover its freedom and swim into the moss and out of sight.

"When we're fish-hungry," she says, "we go out to eat."

Funny thing is that she's easily distracted. A bass will strike when she's staring at the criss-cross sky streaks of jet planes. Red-winged blackbirds scold



Near the lake is the farm home where she and her husband have lived for most of their 52 years of marriage.

and she talks back to them. Sitting eomfortably in that lawn chair, she misses fish by letting the line go limp on the water. Sometimes I suspect she's remembering spitting on those worms to catch mud eats and sunnies.

Sunsets eapture her—"God's sweet half-promise of a fair tomorrow," she quotes from her fifth grade reader.

Tonight she was there again, and as usual, had only a rod and one lure. No stringer. No tackle box, no bait. Not even a net. As the sun slipped down behind some clouds on the horizon, frogs eehoed their *va-rooms* aeross to one another. Then it was quiet. Suddenly other frog noises eame in sereeehy, seratehy tones and the fish suddenly eame to life. There was a rise to almost every splash of her lure and she was pretty busy for a while.

She stayed until the first stars reflected in the quiet water in the middle of the little lake, out away from the shadows of the willows on shore. Stars were not only "up above the world so high..." but also "down beneath the water so low." Their reflections seemed miles deep. Lightning bugs, like the ones she used to eolleet in jars, blinked along the shore and in the pastures.

As she left the doek, she etched the seene in her mind: The sky, the water, the lightning bugs. The blackbirds were silent, the willow shadows were gone and the pond was full of those mile-deep stars.

She eyed the steep bank behind her and then turned and slowly climbed it and thought, "It's getting a little steeper, somehow," and slowly walked back to the house.

"How's fishing?" the old man asked. The question snapped her back from reverie.

"The fishing's great, as always," I replied as I hung my rod in its rack behind our living room door.

Summertime Walleye ERIMER

by Mike Bleech

Most serious walleye anglers say that the best time for walleye fishing is during fall, or during spring, or even during winter. So what happens to walleye during summer? Do they get lockjaw?

No way! In fact, walleyc really put on the feed bag during summer. As it is for the rest of nature, summer is a time of plenty for walleye. There is more for them to eat than at any other time. But this is part of the problem. The walleye have plenty of natural food, barring any unusual problems, so your lure or bait has to look pretty good before they will try to eat it. But try to eat it they will, if you make it look good.

I do not believe there is any one method that catches walleye all summer long. Walleye are moody. Sometimes one thing works, sometimes something else works.

Check out this variety of proven summertime walleye fishing methods. At least one of them should help you catch walleye this summer.

Finding fish

The first thing you have to do is find the walleye. There are four ways to do this. You can go where you believe walleye might be. You can just start fishing and keep moving until you hit a walleye. You can look for walleye with your sonar, or you can ask somebody.

Fishing until you catch a walleye is a time-honored method of looking for walleye, and searching with the sonar is the trendy way to do the job. But the first thing I do, if I don't already have some place in mind—and often even if I do—is ask somebody, if I can find somebody to ask. The local bait and tackle shop can probably do more for you than a week of blind searching or scanning with sonar.

There are endless formulas for locating walleye. This has to be confusing to most anglers. You might wonder if outdoor writers are making up things. The truth is that most formulas for locating walleye apply only to certain specific situations. About all you can say in general is that feeding walleye

will be where the food is, within their habitat. Within the confines of walleye habitat, each lake or river has its own rules. Nothing beats local information.

No matter how much help you get, though, at some point you have to put a lure or bait in the water. There are summer fishing patterns that might hold for several weeks. But for now, assume that you are not sure where the walleye are. You need a method that covers a lot of water quickly, and you must trust that this method will alert you when you do pass by walleye. A lure or bait the walleye will not hit is of no use, no matter how fast it is worked.

Trolling

In lakes or in large river pools, walleye might be scattered and roam in a large area during summer. The best way to find them might simply be to cover a lot of water. This calls for trolling or drifting.

You can move fastest when trolling crankbaits. Even many experienced walleye anglers do not realize how fast you can troll for walleye. Using an accurate trolling speedometer, I have caught walleye several times while trolling 5 1/2 mph. But you must use lures that are designed for these speeds.

Walleye really
put on the feed
bag during
summer.
Summer is a time
of plenty for
walleye.
Try baits and
lures for
consistent action.

I prefer lures that are shaped like shiners or shad, because these are the most common natural forage-fish shapes in Pennsylvania waters. The most productive hues are usually shiny natural colors, sometimes with a bit of red or orange. Silver and blue, silver and black, and gold and black are my standards. Sometimes chartreuse is good, thought I consider this more of a coolwater color.

More important than color is to have lures that troll at all practical depths. For example, have a few that run in the top five feet, some that run in the five-foot to 10-foot range, some in the 10-foot to 15-foot range, and some that dive to 20 feet. Some lures troll even deeper. Your odds for success improve as your ability to troll precise depths improves.

To troll in water deeper than about 25 fect, my favorite rig is a #13 Rapala or a Jointed Rebel on a 30-inch leader, behind a trolling sinker, such as a Gapen Bait Walker. My walleye trolling rig is spooled with eight-pound line. Lures run shallower as line size increases, but you cannot troll very fast with this trolling sinker rig.

An alternative that allows faster dcep trolling is a downrigger. You can buy small, portable downriggers suitable for depths to about 50 feet for under \$75. Use the same lures, but keep in mind that the lures dive below the downrigger weight. Downriggers can be put to great use while drifting, too. Try 'crawler harnesses behind the downrigger, raising and lowering the weight as you watch the sonar.

Walleye often move into shallow water at night to feed. They are quite spooky then, so you have to keep the boat away from them. Planer boards are helpful in this situation. The boards that attach directly to the fishing line and then release free from the line when a fish is hooked are my choice in quiet inland lakes.

I have to retrieve the free planer board, but this board also serves as a marker. I fish behind the board before retrieving it, taking into account how far the lure was



Mike Bleech

behind the board. Many times I can catch another walleye there, maybe a few more.

The old-fashioned nightcrawler harness is hard to beat during summer for either slow trolling—electric motor or backtrolling—or drifting. This rig has one or more spinner blades and a few beads ahead of a two- or three-hook harness. Some anglers make their own, but considering the cost difference between making them or buying them, making them does not make much sense.

'Crawler harnesses

I carry a variety of 'crawler harnesses. Most have Colorado or Indiana spinner blades. The blade sizes range roughly the same as the sizes of my fingernails. My favorite colors are silver, gold, chartreuse, orange and lime-green. Combinations of these colors are good. One idea that encourages me to make my own harnesses is that the leaders are too short on many of the store-bought versions. I like a 30-inch leader that can be attached directly to the trolling sinker.

Hook the 'crawler near the front tip, and again farther back so that the harness hooks spread as far as they can. Attach the harness to the trailing end of a trolling sinker.



Worth Hammond (top photo) hefts a husky walleye. Larry Snavely (above) nailed these nice ones at night in about 12 feet of water along a shoreline.

The amount of weight you need depends on your trolling or drifting speed. As a general guide, try I 1/2 ounces down to 25 feet and two ounces down to 40 feet. Keep the weight at the bottom, and as close to the boat as is practical for maximum control.

Versatility

One of my favorite walleye stories is about a walleye angler I spoke with at Pymatuning. He said he caught a walleye every time he trolled over a particular piece of structure. I asked him why he didn't stop there to fish, and he just gave me a puzzled look.

The gist of this story is that the angler was a troller. That is how he fished for walleye. It didn't even occur to him to fish any other way.

My basic attitude about fishing is that the best angler on the lake is the happiest one. After all, the idea of fishing is to have fun. If your idea of fun is dry fly fishing, motor trolling, or any other single method, then your results will be limited. On the other hand, if catching fish has a lot to do with how much fishing fun you have, then versatility is a key.

If I caught a walleye each time I trolled over a certain place, by the time I caught the second walleye there, I would either drop



anchor or maneuver with the electric motor close by. Then I could cast the same lure that I was trolling into that same water, and I would probably catch walleye a lot faster than I could by trolling. Once you have located a school of walleye, stop looking.

Nevertheless, there are those days when trolling secms to be the only way to catch wallcye.

Drifting

Sometimes you can cover as much water drifting as you can trolling, depending on the current or the wind. The advantage of drifting is that it is quieter than trolling, but drifting is not as accurate as trolling.

Sometimes in very clear water, plain bait is better for drift-fishing than a nightcrawler harness. Nightcrawlers, leeches and minnows are all good baits. One simple, effective drifting rig is a sliding sinker ahead of a swivel, and a two-foot leader from the swivel to a single size 6 wide-gap hook. Try a bait-floater, or a floating jig head for the added attraction of color.

You might have noticed that the methods covered so far have been presented in a logical order. I started with the fastest summertime walleye fishing method, and the methods have been getting progressively slower. While I have been losing speed, though, I have been gaining precision, or something else I want in exchange.

Night moves

One of my favorite walleye fishing methods is to work along the shorelinc with my electric motor between evening and morning. This is a peaceful time to be on most lakes, while the pleasure boats are at



and morning. I keep the boat in about six to 12 feet of water and cast ahead, moving quickly.





their docks. I keep the boat over the depth I expect the walleye to be in, typically from six feet to 12 feet, and cast ahead, moving quickly.

This is a likely time to encounter trophysize walleye, so I use lures intended for big walleye. I like to use minnow-shaped crankbaits about six inches long in this situation. Try working divers near the bottom in clear, rocky bottom areas, and shallow runners over the tops of weed beds. Some of the best summertime night action occurs around islands, or other mid-lake structure that creates shallow-water situations. Don't be too surprised if you hook a big musky while doing this!

Patterns

Once you have done some serious summertime walleye fishing, you should be able to put together some patterns. You should, for example, have learned a few places in your home waters where there are often active walleye. You should also be able to look at a good fishing map and be able to identify certain areas as likely to hold active walleye. I call these "high-percentage" spots—the places I think are most likely to hold active walleye. Knowing how to identify high-percentage places really boosts your odds of success.

Take advantage of high-percentage places by moving from spot to spot until you catch

Aike Bleech

You should be able to look at a fishing map and choose areas likely to hold walleye. Knowing how to identify "high-percentage" places boosts your odds of success.



walleye. This calls for what I call "run & gun" fishing methods. I spend a large portion of my walleye fishing time doing exactly this, going from one high-percentage place to another. I generally keep two or three rods rigged while doing this. This way I am ready for all of the situations I will likely encounter, and I can try a few methods at each high-percentage spot.

One of my rods is rigged with a floating minnow lure, such as a Rapala Minnow, Rebel Jointed Minnow, Storm ThunderStick, Bomber Long A, or Bagley Bang-O-Lure. These are some of the best lures when walleye are active. They are good in shallow water, over weeds, and whenever walleve are feeding on minnows close to the surface. These situations are most often encountered during summer at night.

I rig another rod with a jig, or a jig and bait combination. The standard set-up would be a 1/8-ounce banana head jig, or some other snag-resistant design, and either a leech, a minnow or a nightcrawler. Nightcrawlers would not be used where small panfish are a problem. In a weedy lake like Conneaut, I might use an Arkie jig and a leech, flipping through the weed beds as a bass angler would, but staying in the deepest weeds. In any case, the primary job of this rig is bottom-fishing.

Nightcrawler rigs are hard to beat for

Waterways for Summertime Walleye Fishing

Waterway

Location

Notes

Northwest

Pymatuning Res. Allegheny Res. Allegheny River Lake Arthur Lake Erie

Crawford Co. Warren Co. northwest Butler Co. Erie Co.

improved over last few years good numbers and trophies try night fishing mid-lake structure best fishing anywhere for big walleye

Southwest

Allegheny River Monongahela River Youghiogheny River Youghiogheny Res. High Point Lake

southwest southwest southwest Favette Co. Somerset Co.

Pools 4 and 5 below Maxwell Dam Mckeesport to Connellsville steep and deep steep and rocky

Southeast

Hanover Lake Susquehanna River Beltzville Res.

York Co. southwest Carbon Co. no night fishing night fishing deep water

Northeast

Lake Wallenpaupack Glendale Lake Rose Valley Lake Delaware River Belmont Lake Susquehanna River --MB

Pike & Wayne Co. Centre Co. Lycoming Co. northeast Wayne Co. northeast

night fish for trophies emerging fishery electric motors Water Gap area shallow night fishing

summertime trolling or drifting.



In deep, steep-sided lakes such as Kinzua (the Allegheny Reservoir), Beltzville Lake or High Point Lake, I want a rod rigged with a deep-diving crankbait. I'd stick with a slender-shaped lure.

If I notice a deep-water pattern, then I keep a rod rigged with a jigging spoon. Vertical jigging is about the fastest way to get at active walleye when they are 15 to 20 feet down, and deeper depending on water color.

I would probably keep a rod rigged for nightcrawlers if I were drift-fishing a river or large creek, or whenever the fishing is slow. Nightcrawlers are easy to store, as long as they can be kept cool, and sometimes you can catch a few walleye this way when nothing else works. The rig is generally a size 6 or 8 wide-gap hook, and a medium-size splitshot pinched about two feet up the line. It can be retrieved slowly across the bottom or still-fished. This is about the slowest summer fishing method for walleye.

There are many more summertime walleye fishing methods, but you should be a successful walleye angler if you master these tactics.

Kinzua Dam Tailwaters for Summertime Trout

by Roger Dalo

With silent amazement I watched two anglers pull January rainbow trout from the Kinzua Dam tailwaters. In only a few minutes both anglers caught trout in the seven- to nine-inch range. In a little over a half-hour or so, they had taken and released numerous other rainbows. All but two of the larger trout were released. At first I was a little puzzled to explain the origin of these fish. Then I remembered...

During the summer and fall of 1989, 115,000 rainbow trout fingerlings in the three-to six-inch range were placed by the Fish Commission in Kinzua Dam's outflow. Added to this were 35,000 brown trout fingerlings. It was evident that the trout had found this habitat much to their liking, so much so that I think the seven miles of the Allegheny River from the Dam to Warren will become one of the better summer trout fisheries in the Commonwealth.

According to Ron Lee, Area 2 Fisheries Manager, the Commission is continuing this experimental fingerling program in 1990. This trial fishery extends from Kinzua Dam downstream seven miles to Browns Run. The target is 17,000 rainbows and 17,000 browns per year, and "any trout stocked above this level will be the result of excess hatchery production," says Lee. If early angler success is any indication, the program will be a trout angler's delight.

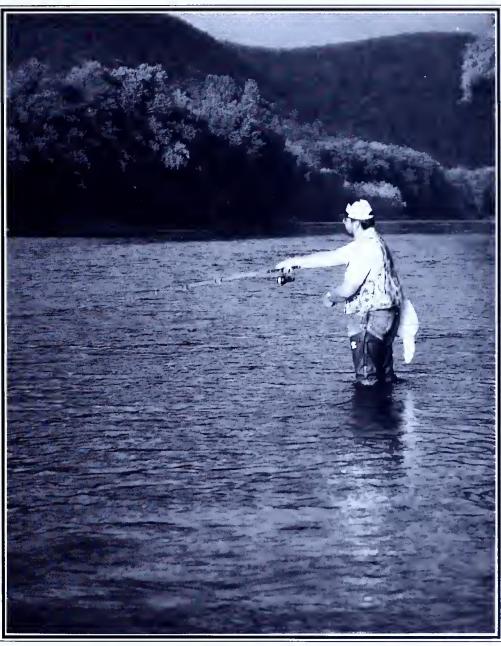
But how could three- to six-inch fingerlings grow an average of three to four inches in only a few short months? Bob Hoskin, regional fishery biologist for the U.S. Army Corps of Engineers at Kinzua, puts it this way: "It is not unreasonable to expect similar

growth rates in fish from both the Allegheny Reservoir and the lower river outflow. The reservoir is highly productive, so it follows that the outflow fishery would mirror its success."

While most Pennsylvania trout streams fall gently to sleep during the summer months, the Allegheny River, with its added population of brown and rainbow trout, promises a colorful time for the hot-weather angler. Here is how to catch these new arrivals to the Allegheny River.

Fishing possibilities

Fly anglers will find these fish steady summer feeders, dining on a wide variety of both aquatic and terrestrial insects. Both ultralight and standard rods to eight feet or so will do just fine. Wet flies often work best, but there is always action for



Roger Dalo

About seven miles of the Allegheny River from the dam to Warren (Warren County) will become one of the better summer trout fisheries in Pennsylvania. Rainbow and brown trout were stocked, and the fish will probably grow quickly.

the dry fly enthusiast. Whether wet or dry, use gray and cream patterns in hook sizes 12 through 16.

Spinfishermen take heart! These Allegheny trout are quite accommodating and won't hesitate to wolf down salmon eggs, minnows, small hard crayfish, nightcrawlers, bright spinners and even an occasional spoon. To ensure success, use line no heavier than six-pound test. You'll also need hip boots or waders because the Allegheny is big water. Furthermore,



don't hesitate to wear a PFD, especially if you're plying deeper holes between the riffles. A wading staff is also a useful item.

Getting to your favorite spot might require a little downhill trek, but a short hike of 50 yards or so can prove rewarding. Better yet, if you've got a canoe or small flat-bottom boat, a wider sampling of the river is at your disposal. A launch ramp, provided by the Corps in the Big Bend Access area, is available, and a take-out point is located just 50 yards upstream of the Conewango Creek above its confluence with the Allegheny River.

More information is available at any of the bait shops in the area. You will find the owners knowledgeable, friendly and helpful, just like the local anglers.

As an added incentive, keep in mind that the Allegheny River has been home to a good population of lunker rainbows and browns for years, which migrate out of stocked tributary streams. On arrival, they prosper on the plentiful river forage, often becoming adults in the four- to 10-pound range. Your chances of hooking a trophy fish using the methods outlined

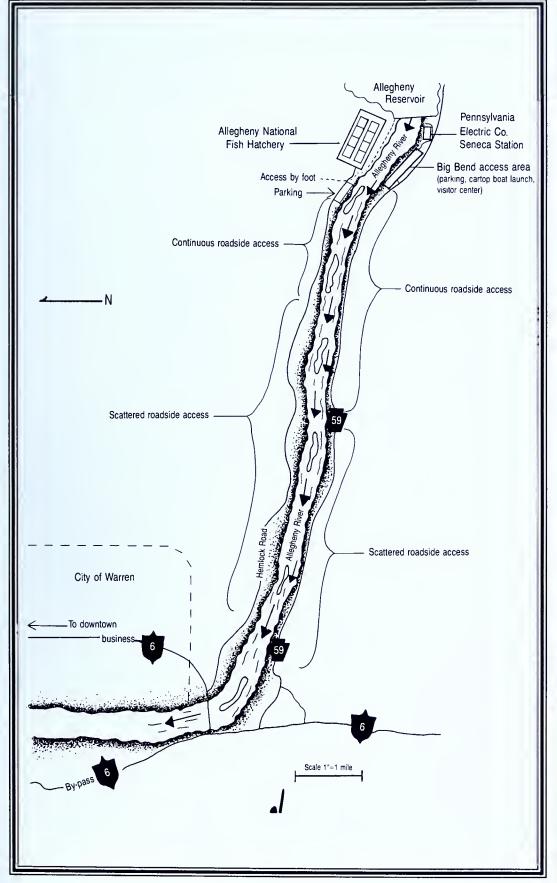
Both shore fishing and boat fishing are possibilities here. The lunker rainbows and browns prosper on plentiful Allegheny River forage, and trout in the four- to 10-pound range can be caught.

here are not certain, but don't be surprised if you get into a battle royale.

If a lunker is etched in your mind, make sure to use stout tackle and substantial offerings to include large streamers, chubs or four-inch Rapalas.

When the dog days of summer arrive and you can't shake spring's trout fever, just pack up the car and head for Warren County's Allegheny River.

Thanks to Fish Commission Area 2 Fisheries Manager Ron Lee; Bob Hoskin, U.S. Army Corps of Engineers area fisheries biologist at Kinzua, for technical assistance with this article. Thanks also to Warren County WCO George Jones for his special insight and ideas.



map graplue- Kim Gottlieh

The trial stocking will continue in 1990, with some 17,000 rainbows and 17,000 brown trout stocked per year.

Before You Go

River level data

Before you go, give the Corps of Engineers (Kinzua Dam) Fishing Hotline a call at (814) 276-0164. Included in the report are up-to-date fishing success data and Kinzua Dam discharge information. Average summer flows range from 600 to 1,800 cubic feet per second (CFS). If the discharge exceeds 2,200 CFS, you might be better off waiting for lower flows.

Other considerations

Shore anglers are asked to fish those stretches of the Allegheny that allow roadside access. In the other areas, it will require your crossing private property and may not sit well with property owners. While you are angling, leave only your footprints, and take with you fond memories and perhaps a few fish.

Angling information

Holmes Sporting Goods and Bait, 5 Pennsylvania East, Warren, PA 16365; (814) 723-8810.

Field & Stream, 1917 Pennsylvania Avenue West, Warren, PA 16365; (814) 726-1889.

Allegheny Outfitters, Market Street Plaza, Warren, PA 16365; (814) 723-1203.

Accommodations

Travel Northern Alleghenies (TNA), 315 Second Avenue, P.O. Box 804, Warren, PA 16365; 1-800-624-7802.

TNA will provide additional maps and information on family activities, restaurants, lodging and related information to help make your trip an enjoyable one.—*RD*

Doubleheader for Panfish by T. C. Flanigan

One of the finest gifts I have ever received was some unique fishing knowledge. In fact, it was the best panfishing tip I have ever learned. The day that "Big Al" showed me how to use the "doubleheader" system, my panfishing enjoyment and success increased greatly. A large part of the fun of fishing is the opportunity to share the experience with a companion. Sharing the fishing fun and some friendly teasing, plus a bit of competition, can make even a fruitless trip enjoyable.

On a gorgeous spring day a fcw years ago, Al asked if there was any good bluegill fishing in the area. I thought of a local farm with three nice ponds that I knew held some big panfish and largemouth bass. We spoke with the landowner and obtained permission to sample the fishing.

I was equipped with an ultralight spinning rod, some live bait and a few jigs in which I had some faith. Al produced a fly rod and offered to share with me his proven strategy for catching big bluegills, a pastime at which he is an expert.

I watched closely as he tied a strange fly arrangement onto his leader and listened while he explained his system. The rig consisted of a 7 1/2-foot tapered leader with a popper attached, a standard panfish rig. The strange part about it was that there was another lightweight leader attached directly to the hook of the popper. This leader was 2 1/2 feet long and was tipped with a spider-like wet fly with a black chenille body and eight white rubber legs.

The wet fly can be easily manufactured at home. As a matter of fact, Al says he can produce 10 or 12 while watching a football game on TV. All that is needed is a supply of size 8 or 10 hooks, some chenille for the bodies, strong black thread, and some white or yellow rubber legs. Don't spare the head cement because big bluegills can destroy poorly constructed flies. The given name of the fly is "the bream killer." That sounds a bit boastful, but it is actually deadly in fooling those big slabsided 'gillies.

In short order on that memorable day, Al proved that he could out-fish me at a rate of three fish to one, and he did so without having to pause to rebait his hook. If that is not enough to sell his system, the thrill

of fighting large bluegills on light fly tackle certainly is. They are some of the strongest-fighting freshwater fish. The real bonus though is in the eating. Bluegill fillets are gourmet delights.

Wet fly action

The key to the system is the special wet fly and the action it has because of the way it is rigged to the popper. The short, light leader connecting the two causes the bream killer to rise and fall as the angler moves the popper. Bluegills seem to find this type of action irresistible.

The proper method of fishing this combo rig is to place it on the water and allow several seconds for the wet fly to sink. Then agitate the popper ever so slightly and get ready. A strike on the wet fly can be instantly detected by the rearward movement or sudden disappearance of the popper, while a hit on the popper is, of course, obvious.

The popper serves two purposes. It acts as a monitor or strike indicator for the wet fly, and as an effective lure itself. For this reason, good quality, durable poppers that float well are an absolute must. It is wise to keep several combos rigged and ready in your vest or tackle box. Doing so saves valuable fishing time just in case you snap a wet fly off on a backcast or hang the fly in a tree.

Casting

Casting the double rig can be challenging because the length of the leaders and the two flies are wind-resistant. Although it is fishable with most any fly rod and line combination, a fast-action rod with a floating weight-forward line make the task a pleasure. I have found that my 8 1/2-foot graphite rod and shooting-taper six-weight floating line give me plenty of control and are fun to use.

Ease of casting and fly placement can be enhanced by using a fairly stiff 7 1/2-foot tapered leader of 4-pound test. The wet fly leader should be lightweight and very limp to permit proper action. Three-pound test is sufficient for the dropper leader. Tie it directly to the hook bend.

This is a double-barreled approach to panfishing. I like to call Al's rig the "doubleheader" system because it is not uncommon to take two large bluegills simultaneously, especially if the popping bug gets the initial hit. When this occurs, it is almost certain that another curious fish will grab the wet fly as it trails the hooked fish. What could be better than catching these super panfish on light fly tackle? Taking them two at a time!

I have experienced many successful bluegill excursions since first learning to use the doubleheader rig. Each time, the system has proven to be dependable and effective.

It is certainly not limited to bluegills alone. It is effective for all types of panfish as well as both largemouth and smallmouth bass. Doubles on bass are thrilling and a true test of a fly rodders fish-handling ability. Often mixed doubles occur when a bass takes the popper and a bluegill inhales the bream killer, or vice versa.

No matter how it happens, it's all great fun. So forget the bait. Give the doubleheader system a try and get in on the fun.





doubleheader system takes bluegills and other panfish as well as largemouth and smallmouth bass.

Tlie



July 1990 Pennsylvania Angler

Bass Love

by Darl Black

"Thar's gold in them there weeds." That is the rallying cry for a select group of fishermen during the summer. The anticipated bonanza actually refers to black bass—largemouth, to be specific.

Experienced bass anglers know well the connection between largemouths and weeds. A lake without good weeds rarely sustains a strong population of big largemouth bass.

Of course, vegetation alone does not make a great bass lake. Suitable spawning areas and adequate forage for all stages of bass development must also be present. And if the entire lake becomes too congested with vegetation, other problems may arise. But with the right balances of vegetation, largemouth bass will be snug in the weeds.

Beautiful slop

I divide aquatic vegetation into two general categories. First are the weed clumps or weedbeds on the flats usually comprised of one prominent vegetation type. These plants attract a portion of the bass population. Because there is open water above the weeds or between the clumps, these areas may be fished easily with a variety of conventional methods. Most anglers can deal with this weed growth.

The second category is thick vegetation in the shallows. This may be a mixture of pads, grass, moss, reeds and other species. Or it may be a single plant species that forms a surface mat. In either case, this "slop" appears impossible to penetrate.

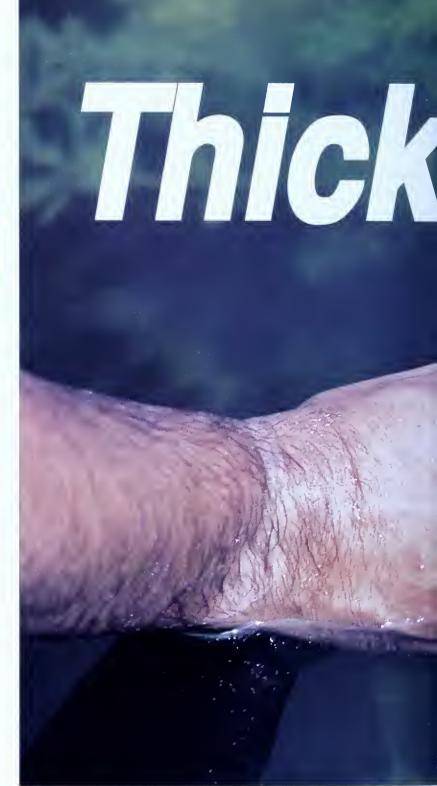
Even anglers who fish weedlines or weed clumps with a semiweedless spinnerbait often hesitate to get right into the thick vegetation. If some hardcore bass anglers stay away from the heavy vegetation, what about the majority of fishermen? Yeah, you're right. They avoid it. For this reason, on many waters bass in dense, shallow vegetation are rarely disturbed.

But for anglers who have learned not to cringe at the sight of thick vegetation, there are riches galore in this green salad.

Worth Hammond, one of my fishing companions, views the slop as a smorgasbord for largemouths.

"Bass have everything there they need to survive. Along with sufficient oxygen and cover, in weeds there is plenty for bass to eat—frogs, minnows, insects and insect larva, young-of-the-year sunfish, golden shiners, small snakes—as well as the opportunity to ambush that meal. Unlike open-water gamefish, bass prefer not to run down their forage.

"Most people won't take the effort or time to learn to work the slop. However, if you become competent at this type of fishing, on many lakes you will be able to reach a population of bass that has not been pressured by other anglers. But it's more than just using specialized lures. You must identify the high and low percentage areas."



Darl Black



A variety of spoons makes great offerings for the thick stuff.



The right spots

What appears as an impenetrable mass to the angler isn't always impenetrable to bass. Plants that provide overhead shelter and relative open water under the surface are sites where bass stay for extended periods. Weeds that grow very close to the bottom do not provide cover that bass like. The good cover weeds house bass every day from June through late summer.

Pad-type vegetation that features large, floating leaves is one case in point. This includes plants such as spatterdock, water lily and watershield. If the water is clear, don't expect too much in the way of bass in this cover. However, when other vegetation is intermixed with a pad bed and the water is stained, hold on to your rod tightly!

Another situation is the milfoil or coontail mat. In some instances, these species of submerged plants reach the surface and spread across the surface forming a mat. Looking at the top, it appears that the vegetation is entirely too thick to let bass ma-

Large plastic worms (above) are productive offerings for fooling bass in heavy cover. Jiggle the worm or jump it a few times when it hits the bottom.

neuver. But if you pushed the top mat apart, you would discover plenty of room under the surface.

Of course, slop is not limited to these examples. Any combination of vegetation that affords overhead shelter and underwater openings for ambush has the potential for holding bass.

Are there slop situations that are unproductive? Sure. One area to avoid is filamentous algae. Usually referred to as pond scum, these disgusting-looking mats of stringy algae do not attract bass. However, do not confuse filamentous algae with the tiny floating plant referred to as duckweed. Moved about by the wind and current, duckweed often forms green carpets on the surface. Bass



are not turned off by duckweed, and they often seek sanctuary under the carpet.

At some point during the summer or early fall, shallow vegetation starts to die. The decaying process uses up oxygen, releasing hydrogen sulfide gas. When this happens en masse, bass and baitfish leave the immediate area. However, a few brown or dying weeds do nor force an evacuation. In some lakes in Pennsylvania, bass remain in the slop through early September.

Techniques

If you suspect that bass are in the slop, how do you go after them? The most successful anglers use a combination approach.

Initial lure presentation attempts to entice bass from the cover with a surface disturbance. Weedless surface spoons, poppers and frogs are skimmed across the top of the vegetation. If a hungry bass sees the disturbance, an exploding attack will be instantaneous.

But too often the bass are inactive and not interested in charging after a meal. The angler must take the lure right to the fish by penetrating the vegetation cover.

Rob Genter, another fishing friend, is a specialist when it comes to thick vegetation. Like most slop anglers, he takes the twostep approach.

"I like surface slop baits such as a Moss Boss or Snag Proof Popper for aggressive fish," Rob says. "With the Moss Boss, it is necessary to keep the lure moving to work it properly on the surface. The angler must reel steadily, slowly dragging or twitching the lure across the vegetation. The Snag Proof Popper can be worked slower with jiggles and pops."

Because bass do not have a clear view of the offering plodding across the surface vegetation, the fish frequently miss the lure on the first strike. It is important to continue working the lure back to the boat after a miss. "It's not uncommon for a bass to attack a surface slop bait several times on a single cast before actually grabbing the lure," Rob says.

Worth engages in a similar game of locating active fish in the thick stuff, but he uses weedless spoons that may be fished underwater as well as on top. He often chooses the Johnson Silver Minnow or Timber King Spoon. The Timber King Spoon comes equipped with a rubber skirt for attraction. A pork rind or piece of plastic worm is always added to the Johnson Spoon to provide added action.

This type of lure may be dragged across the thick vegetation to an opening, then allowed to flutter down. These spoons wobble side-to-side in an enticing manner as they fall, and they exhibit a similar action when retrieved slowly underwater. Because these spoons twist line, be sure to use a quality ball-bearing swivel.

When bass are particularly tight-lipped, these lures draw few strikes. Then it is time to switch to a worm or jig.

"I prefer to fish a slow-falling worm," Rob says. "I use a small worm and fish it with very little weight, usually only 1/16-ounce."

To achieve distance and reach almost inaccessible pockets of open water, Rob uses a short spinning rod to skip the worm across the surface much like skipping a stone.

"To minimize hang-ups on vegetation, I hide the weight inside the worm. You can do this by wrapping a piece of solder around the top of the hook shank immediately below the eye. The worm is then rigged Texas style with the hook eye, weight and the hook point inside the worm body."

Worth takes a different approach. "I pitch or flip a seven- or eight-inch worm on a 7 1/2-foot flipping rod. If there are open

pockets to drop the worm through, fine. But if the mat is solid, I break through using a heavy sinker. Usually a 1/2-ounce worm weight does it, but I have used as much as one ounce. It is important to peg the weight so it doesn't slide on the line.

"The quickly dropping bait might scare some fish, but it must also attract other bass because this technique has been very successful for me. Once the worm settles to the bottom, I jiggle it or jump it a few times before making the next flip."

The worm presentations discussed by both Worth and Rob are successful, but when it comes to looking for a trophy largemouth in the slop, I vote for the jig-and-pig. There is something about a chunk of fluttering pork on a dancing rubber skirt that seems to attract bigger bass.

Tackle

Don't attempt slop fishing with a wimpy rod and line. Except for the skipping technique, long rods are preferred for casting and flipping. Long rods provide better line control when maneuvering baits through and around vegetation. The rod must be powerful to produce a solid hookset with slop baits that have a heavy duty hook, as well as aid in horsing out bass when they try to bury themselves deep in the cover.

For this jungle warfare, 14-pound-test line is as light as you should consider using. Seventeen and 20-pound are better choices, and 25-pound line isn't too heavy. Because the line is in constant contact with vegetation, use a line with a high abrasion resistance.

Tough going

Fishing areas of thick vegetation isn't easy, but the real challenge is getting a boat through the weeds. Very often when the average angler attempts to run his electric trolling motor through heavy weeds, little progress is made, the angler becomes disgusted and he gives up. The following considerations enhance electric motor use for slop fishing.

First, the electric motor must have an efficient weedless prop that throws off vegetation rather than wrapping it around the prop. Weedless props now come standard on motors, but if you have an older electric motor, it may not be so equipped. A replacement weedless prop may be available. If not, consider buying a new motor.

Second, the pounds thrust of the motor must be enough to power your way through the vegetation. Twenty-eight pounds of thrust is the minimum recommendation. Run the motor at high speed. Operation at lower speeds is usually stopped cold in thick weeds.

Next, adjust the shaft setting on the electric motor so the prop draws just enough water to run at high speed without blowing out. The shaft most often bogs down in vegetation, even though the blades on the motor are clear of weeds. The lower the motor sets in the water, the more shaft is available to collect weeds.

Finally, tilt your outboard motor so that just the skeg sits in the water. A little bit of the outboard in the water acts as a kecl for better steering control with a bow-mounted trolling motor, but too much outboard simply gathers more strands of vegetation.

Even following these recommendations, at some point your boat probably will become trapped in vegetation. That is when you break out the slop fisherman's best friend—a long-handled push pole.

Fishing the thick stuff—it ain't easy, but it sure is exciting, and the rewards are greater than the inconvenience.

KipsPage by Steve Ulsh

You've Caught a Fish! What's Your Next Move?

The first three things you have to consider when you catch a fish are what kind of fish you have, is it in season, and is it long enough? All good anglers should

be able to identify fish, and know when you can keep them and minimum size lengths of each species.

The fourth most important and greatest decision you have to make is to keep it or release it. The decision to keep it is easy. You either put it in your fishing vest, creel, fishing basket or on your stringer.

You may have decided to take the fish home and eat it, but releasing it can also be an easy decision. If the hook is in the lip, you simply push the hook back over the barb and release the fish to bite again.

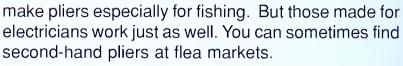
Releasing can be a problem, too. If the hook is deeply embedded in the mouth or throat cavity, you must act quickly and correctly to remove the hook. Improper handling of a fish while doing this kills the fish.

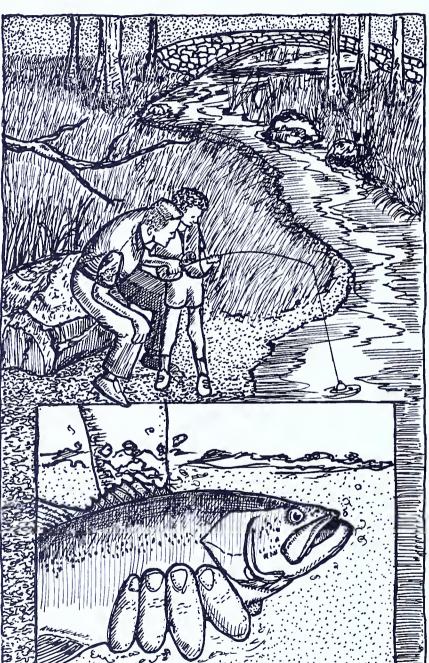
To remove a deeply embedded hook, you should have a hook disgorger in your tackle box. This long, slender tool lets you reach farther into a fish's mouth than you can with your fingers. The tool also

eliminates tearing the tender flesh inside the fish's mouth.

If you don't have a hook disgorger, a pair of long

If you don't have a hook disgorger, a pair of long or needle-nose pliers will work. Try to find the longest-nosed pliers possible. Some tackle companies





A hook deeply embedded in the throat cavity poses a danger to a fish. If the point is turned upward, removing the hook could puncture the air bladder or kidneys. If the point is downward, it could puncture the heart.

In cases where the hook is embedded in the throat and you want to release the fish, the best thing to do is cut the line. In time, the hook will either work free or dissolve. Try to cut the line as far into the fish's mouth as you can without hurting the fish. Here, a pair of fingernail clippers will do the job. You can also use a pocketknife that has a small pair of scissors as part of its blade system.

Catching fish is fun. It's the most exciting part of fishing. Releasing fish you don't want to eat is satisfying. To know you've carefully, kindly and humanely

returned a fish to its environment to swim again and perhaps breed others for future anglers is one big step to becoming a good steward of the earth.

illustration- Rose Boegl

ANGLERS CURRENTS

Fines Raised for 1990

A recent amendment to the Pennsylvania Fish and Boat Code has updated the fine structure for violations of fishing and boating laws and regulations. House bill 650 was signed into law as Act 1989-102. The new law, which passed with strong support of Pennsylvania sportsmen, means that those breaking the law will pay stiffer fines in 1990.

Here are the highlights of the bill:

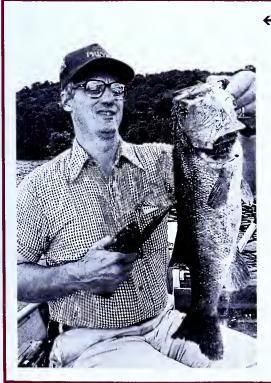
- Misuse of waters and property, both private and Commission-owned—an increased fine from \$25 to \$50.
- Littering—an increase from \$25 to \$25 plus \$10 per item.
- A new fine for household refuse—\$50 plus \$10 per item.
- Fishing without a license—\$25 plus twice the cost of the license. For example, a resident license is \$12, so the fine would be \$25 plus \$24.
- Pollution, stream disturbances, boating under the influence and reckless operation of a watercraft—\$250 to \$5,000 and/or imprisonment not to exceed 90 days.
- Repeat offender apprehended a second time in a single year—the fine is doubled.
- Fleeing or eluding an officer—\$100 fine.
- Giving false identification—\$50 fine.
- Homicide by watercraft—not less than \$2,500 or more than \$10,000 and/or imprisonment not to exceed five years.
- Stealing hatchery fish—\$250 to \$5,000.



Pennsylvania Angler was named 1989-90 "Conservation Communicator of the Year" by the Pennsylvania Wildlife Federation at the organization's annual Conservation Achievement Awards Banquet last April. The award recognizes individuals and organizations in Pennsylvania that contribute significantly to the conservation of Pennsylvania's natural resources.

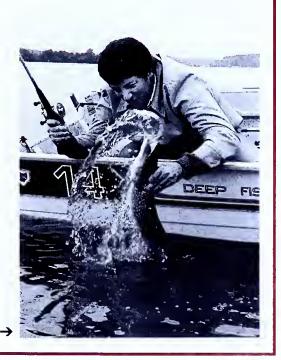
Pictured is the team that produces Pennsylvania Angler. Seated are (left to right) Eleanor Mutch, Cheryl Riley and Ted Walke. Standing (left to right) are Patti Copp, Charlene Glisan, Rose Ann Bartal and Art Michaels.

Eleanor Mutch oversees Circulation. Cheryl Riley directs the Bureau of Education and Information. Ted Walke is Art Director. Patti Copp works in Circulation. Charlene Glisan and Rose Ann Bartal are staff assistants, and Art Michaels is editor.



← C. Boyd Pfeiffer won the Mason-Dixon Outdoor Writers Association (MDOWA) 1989 Pete Greer Memorial Award for Best Published Photo with his picture on page 23 of the November 1988 Angler. Pfeiffer is formerly president of both the Outdoor Writers Association of America and the Pennsylvania Outdoor Writers Association.

Outdoor writer-photographer Bill
Ignizio recently won the 1989
Outdoor Writers of Ohio (OWO) Best
Published Photograph, Black-and-White
Division, for his action picture on page
4 of the June 1989 issue. Ignizio won
the Lew Klewer Award last year,
OWO's highest honor, and he has
written hundreds of fishing articles for
more than three dozen magazines. →



Anglers Currents

Don't Use Automotive Parts in Your Boat

Some marine engine parts seem very expensive compared to their automotive equivalents, but there are major differences in the environments in which they are designed to operate. Some automotive fuel components release

fuel and vapor into the engine area, and some automotive electrical parts emit sparks. Fuel vapors do not accumulate beneath the hood of a car, but they quickly reach explosive levels in the engine area of a boat.

These parts include:

- Alternators
- Distributors
- Starters, generators, and acces-

sory motors (hydraulic pump, tilt drive, and so forth)

- Starter solenoids
- Carburetors
- Fuel pumps

Using automotive components may seem like a bargain when you repair or replace parts on your boat, but be sure to look at the value on human life when you tune your marine engine.



Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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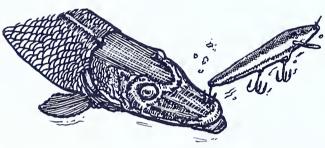
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Angler's Notebook by C. Boyd Pfeiffer



Pike and pickerel are less able to turn and ambush prey than largemouth bass. When fishing for pike and pickerel, use lures that track straight so that pike can home in on them. Wide-ranging and wobbling lures often cause missed strikes.

To impart a different type of action to your flies when all else fails, try the salmon angler's riffling hitch. Use this on streamers or wet flies to make them skim the surface. Tie the fly on normally, and then wrap over the head with two half hitches, pulling them up tight to one side.

Watch your timing when fly casting. The loop of fly line on the back cast must be straightened out before making the forward cast. The pause between back and forward casts becomes longer and longer as the amount of line out increases.

When fishing for big fish where you must use your reel's drag, set the drag to about one-fourth to one-third of the line test. You can always increase drag by raising the rod for additional line/rod-guide friction.

If a fish makes a long run, loosen the drag. The friction of the line in the water adds a lot of drag. Tighten the drag slightly as you regain line. An exception to this is if the fish heads for a snag that might break off the fish.

To add drag to a fly reel or spinning reel without changing the reel setting, hold the spool and allow the spool to turn against the friction of your hand or palm. For this reason, many fly reels are made with exposed "palming spools."

Small leaders are often difficult to tie to small lures and flies, and become more so as we get older. For aid in tying knots, get a pair of reading glasses of the right diopter from a variety or general store. Take a leader and fly or lure with you when you make the purchase so that you get the best glasses for the distance at which you tie knots.

Do not use oils and greases interchangeably when lubricating reels. Greases are only for gears and gear boxes in reels and for level-wind gearing in casting reels. Oils are for all lighter lube spots such as handles, bail rollers and bail hinges.

One way to keep leader and tippet spools is to thread them together onto a loop of light rope. Arrange the spools in order from lightest to heaviest test and make sure that the spools have some way to hold the mono in place.

Mono casts best when wet. To make your first casts of the day easy, remove the spool from your spinning reel and soak it in water for a few minutes. For casting reels, splash the line spool with water before heading for the lake.

Take care when handling catfish because they have sharp spines on the dorsal and both pectoral fins. Grasp them by the belly with one finger on each side of the pectoral fin to hold them securely and without danger.

illustration- Rose Boegli

On the Water

It Isn't **Always Pretty**

with Dave Wolf

Usually I find the water calming, a place to seek solitude and relief from the rigors of daily life. Whether casting a fly or paddling a canoe, the effect is the same. For the pleasure is not in the pursuit, but rather in the arena in which it takes place.

Last spring the arena became an ugly place, and the water that had been so tranquil now carried death in its currents. Globs of burnt crude oil floated by like giant jellyfish and a sheen covered the water. Sodium hydroxide flowed by with little visible evidence except for the fish that turned belly-up. The stream had booms strung from shore to shore, bellied in the currents like restraining ropes in state park swimming areas.

The river and the air smelled foul and there was no tranquility here; none of the feelings I associated with the water and the fish was present. A train had derailed at the tail end of Earth Day, and fire crews fought the burning tanker and coal cars that had left the tracks. I am not here to blame, for that is someone else's job. The total number of fish lost is still being calculated at this time. Damage to water quality in the stream and the surrounding area is still being assessed. I point no fingers; instead, I shove my hands in my pockets, hunch my shoulders and answer questions from the curious press.

There are definite priorities at times like these. Tragic events are placed in perspective and the first order of business is concern for public safety, then the drinking water of those living in the area, and finally, the environment and an innocent river that just happened to flow past the wrong place at the wrong time.

Scouring the banks for signs of pollution and dead fish was not a pleasurable task, and it certainly wasn't a pretty site. The effects of the pollution were repulsive to anyone who respects flowing water and the pleasure it provides. As if dead fish and floating crude oil were not enough, the litter that lined the banks only added insult to injury.

State and federal agencies worked round the clock to collect samples and monitor water quality. People were evacuated from their homes and tired firefighters came and went from the firehouse where the state agencies gathered to address needs and concerns.

Unfortunately, the stream suffered—as did those who use the resource. Many homeowners went through the hassle of evacuation, while others' homes suffered physical damage. It was only one accident—one pollution. But pollution reports come across my desk daily—some severe, others only mild. In most cases fish die, as does part of the resource.

The problem is that modern-day chemicals and hazardous waste increase the possibility of death to streams and all aquatic life, and it happens far too often. The problem goes beyond the loss of recreation and our water resources; it creates human health hazards as well. Stream pollutions no longer simply kill fish—they can endanger human lives as well.

It would be idealistic to think that pollutions can be stopped; yet, everyone must be concerned with the dangers they pose and try to prevent them. The deaths of streams are not everlasting;



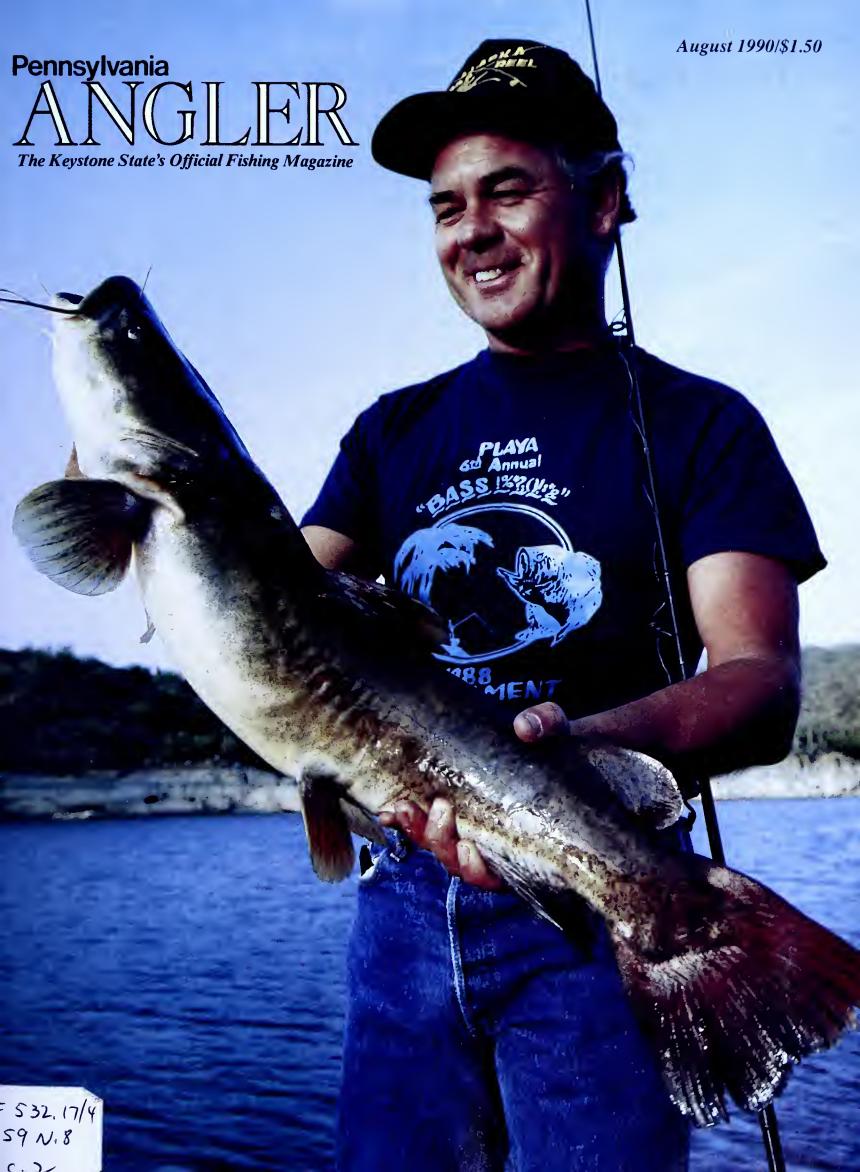
they can be brought back, but they are not like the cat with the proverbial nine lives—some may be lost, or at least degraded, forever.

After three long days at the scene of the pollution, I returned home. I sat in my front yard looking down the hill to the lake and stream. Anglers had ringed the lake and others probed the stream in search of trout. A feeling of tranquility returned; but I realized that although I was removed from the pollution site, I wasn't removed from the possibility that it could occur here, even in my own backyard. The thought left a hollow feeling in the pit of my stomach, and I was left with a lingering memory that being on the water isn't always pretty.



Dave Wolf





Straight Talk

Farewell, Good Friend



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

I first met Ralph Abele in 1971 on the banks of Wykoff Run in Cameron County while he was executive secretary of the Joint Legislative Air and Water Pollution Control and Conservation Committee (Joint Conservation Committee). He was accompanied by Marian Brooks and other conservationists who were concerned about the effects of highway construction on prized northcentral Pennsylvania streams.

At our first meeting, I took an instant liking to this man, even though I knew little about him or his background. I was impressed by his sense of humor and urgency to get things done. Immediately I recognized that he was indeed a unique individual. Little did I know at that time that six months later he would be appointed executive director of the Pennsylvania Fish Commission, thereby giving me the opportunity to work with him on a daily basis for more than 15 years.

Ralph wasn't fully versed in all intricacies of the Fish Commission and its programs when he came on board in January 1972, but he was intelligent and a very fast learner. His first editorial in *Pennsylvania Angler* stated:

"Throughout our 106-year history, many dedicated administrators have directed the Commission's progress—and each has left an indelible mark in the Commission's annals. All shared a common goal: To retain and maintain Pennsylvania's tremendous waterways resources for the generations to come."

This common goal continues to be the driving force behind the Commission's success today, just as it was then.

Ralph's friendly manner and excellent memory for names made him easy to like and he was quickly accepted as the new leader by the Commissioners and their 347 permanent employees. He was a decorated World War II veteran, a dedicated public servant and a man of high integrity who was never shy about telling others his opinion. His love for the environment and the vital natural resources of Pennsylvania and the entire world showed quite clearly in every decision and effort he made, thereby earning him the widespread respect of environmentalists and conservationists. In 1982 he was described by one writer as "Lord of the Fish" for his fierce stance against chronic polluters of Pennsylvania's waterways.

He could quickly lose his patience with willful violators of water quality protection laws and would not tolerate unscrupulous behavior by public employees or elected officials. He was able to create an awareness among others that their best efforts were essential to successful attainment of their goals, and he demonstrated his tolerance for those who made the required commitments and worked within his sense of values. He permitted the various program leaders within the Commission to think independently, but he insisted on a unity of action. When action was implemented, he fiercely defended the staff's efforts to move ahead.

Ralph was a devout Christian and devoted family man, and was loved and respected by everyone who knew him well. Pennsylvania is a better place because of his sojourn on this earth. We thank the good Lord for sharing Ralph Abele with us for almost 69 years, and those of us who were privileged to have known him sadly bid him farewell.

August 1990 Vol. 59 No. 8

Pennsylvania

The Keystone State's Official Fishing Magazine

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A Streetcar Named Trou

by Mike Sajna



Along with steel pennies, Victory gardens and scrap drives, the spring of 1943 also brought home to a nation at war the specter of rationing. If Hitler were to be defeated and Pearl Harbor avenged, everyone was going to have to do his part. Sugar, meat, silk that could be used for parachutes instead of stockings, and tires that would serve the war effort better on Jeeps than on Fords all became scarce.

Rationing made life difficult for everybody from time to time, and it even gave rise to a black market. But for the most part, the new law was accepted and followed. A few meatless days each week and no cookies or cakes were nothing compared to what sons and husbands were facing overseas. Still, the lack of enough spare gasoline for even a single fishing trip was tough, nearly above and beyond the call of duty.

Americans, however, are innovative when it comes to solving a problem, and fishermen are ingenious and determined when it comes to sneaking off to a stream or lake. So as the sky turned bright and warm, and the skunk cabbage sprouted, Bob Runk and Morgan Rider, two young researchers working for a Pittsburgh defense contractor, began dreaming about spending a few days fishing for trout on Dunbar Creek in Fayette County.

For weeks the two men talked and schemed for a way to make the trip. They thought about

pooling their gas coupons, but that bought them each only enough of the precious fuel to travel back and forth to work and to some essential shopping. Then they checked the local bus schedules, but found that none ran to Dunbar. Defeat loomed. The Memorial Day holiday was fast approaching and set to fall on a Monday, giving them three full days off. There had to be a way.

Finally, in the pile of bus schedules that continued to grow on their desks, one appeared for an old trolley line with a terminal in Greensburg. Glancing over it out of curiosity, they discovered that it ran south from that Westmoreland County city to Connellsville and Uniontown, and along the way it stopped in the town of Dunbar. From Bob's home in Forest Hills on the eastern edge of Pittsburgh, they could easily catch a bus to Greensburg and then hop the trolley. They were in like

With transportation now set, the two men began thinking about equipment. Space would be limited, and they would have to carry everything they took several miles upstream from Dunbar, so they agreed that things had to be kept simple. After their fishing gear, they settled on sleeping bag shells, wool blankets, ponchos, hip boots and a little food. A tent would not be needed, Bob told Morgan, because he knew of two shacks along the stream where they could stay.

Among Bob's fishing equipment was a Paul Young rod given to him by Charlie Fox. Bob, who had grown up near the famous angler's home outside of Harrisburg, had been taught to fly fish by Charlie in the mid-1930s. The rod had been created by Young in the depths of the Great Depression and named "Prosperity" as a hope for the future. It originally sold for less than \$10.

Rationing made life difficult for everybody from time to time. For weeks the two men talked and schemed for a way to make the trip.

Once, before Henry Ford and the other auto makers began forcing them out of business to generate car sales, trolley lines criss-crossed southwestern Pennsylvania. They provided cheap, reliable and somewhat stylish transportation for the residents of the region's many tiny coal patches and towns. The trolley Bob and Morgan boarded in Greensburg was about 60 feet long and came complete with its own restroom and a smoking section.

As on mass transit vehicles today, the old trolleys also were occasionally a source of education. In Bob and Morgan's case, it came from a locust post salesman who, all the way from Greensburg to Dunbar, loudly expounded on the finer points of locust posts, which at the time were used to shore up mine ceilings, including how he cheated on post weights by adding rocks to every wagon load.



It was nearing dark when the trolley reached Dunbar and a gentle rain began to fall.

Because their blankets and sleeping bags were bundled up in their ponchos and the air was still quite warm, the two men decided to forego the rain gear. They began hiking upstream, wearing only the light jackets they had started the trip in. It was after nightfall by the time they reached the area above Limestone Run where the first shack stood. They learned that sometime since Bob's last visit, it had burned to the ground.

"Morgan," Bob said undaunted, "we're going to wade across the creek." On the other side, somewhere up there, is a little road and somewhere along it is another shack."

With their flashlights, the two men crossed the creek and began searching for the second shack. They found it a short time later, but when they opened the door, they were greeted by the



scurrying of a pack of overfed rats. "What do you think we should do?" Bob asked.

"I am not putting up with rats," the other man answered. "We're going to sleep outside."

Backing away from the shack, they scanned the area for a dry place to spread their sleeping bags, and then the rain stopped and the moon appeared. Finally, it seemed, things were beginning to look up. But then the rain that had fallen earlier started to rise again in thick clouds of humidity and out came the "punkies."

Every fisherman beyond the category of complete novice has probably felt the sting of punkies, those "no-see-ums" that once kept Indians and settlers out of certain areas of Pennsylvania with a bite that would be the envy of an Everglades mosquito.

Never having thought to bring insect repellent along, Bob and Morgan first sought refuge by sinking deeper and deeper into their sleeping bags. But the nasty little buggers, sensing a captive meal, found the tiniest openings and quickly followed them into the depths. Then both men lit cigarettes and blew the smoke into their bags. That worked, but only for the 15 or 20 minutes it took the swarm to regroup and counterattack. The night drifted into a numbing succession of cigarettes and catnaps.



But hope springs eternal in fools and fishermen, and with the dawn and retreat of the

punkies, Bob and Morgan's enthusiasm returned. Quickly they ate breakfast and rigged their rods. There were only a few scattered clouds in the sky, so they decided they would not need their ponchos. They bundled their sleeping bags, blankets and food in them, and then wedged the packages into the crotch of a tree and headed upstream.

Dunbar Creek today is still a popular

trout stream with anglers from the Pittsburgh area, but pollution has taken its toll and it no longer offers much in the way of regular fly hatches. In those relatively less toxic days, it was a remarkable caddis stream. Anglers would crush dozens upon dozens of stick caddises with every step they took. Along with the caddises, the stream held fairly good hatches of Ginger Quills and Baetis mayflies.

So even though the trip had been somewhat less than what they had expected to that point, Bob and Morgan still had high hopes for the fishing ahead. Then true disaster struck. On his very first cast, Bob hooked an 11-inch rainbow. This is it, he thought. It's worth it all. But he was a young man and had overlooked one of fishing's great truths. "Woe be the angler who taketh a fishe on his first cast," Sir Izaak might have written. "For he shalle not again that day bring to net another creature of rivere or lake."

Two hours and a mile-and-a-half of hard fishing later, neither man had another strike, nor noticed a rise, nor even saw a fish. But still they continued to work their way upstream, farther and farther away from their campsite and equipment, until a low rumble arose and the heavens split.

Without ponchos the two men crowded for shelter under trees, logs and against rocks. But it was all for nothing, of course, and then the stream began to swell before their

Every fisherman has felt the sting of "no-see-ums." Without repellent, the night became a numbing succession of cigarettes and catnaps.

eyes, snuffing out what little prospect remained for a good day of fishing.

"Morgan, let's go back," Bob finally suggested.

"I agree," his friend answered, defeat heavy in both their voices.

Ducking and weaving their way under dripping branches and around slippery rocks, the two men hurried downstream to their campsite, collected their bundles and headed for the road. They had gone only a short distance when they spotted two other men standing next to a rickety old Ford stalled in the middle of the

"Would you guys give us some help," one of them asked when he saw Bob and Morgan.

"Sure," Bob answered. "But look. We're all wet. Everything is a mess. We're not catching anything. The creek's rising. We'll help you push this thing out if you'll take us to Connellsville."

The two unfortunate motorists lived in Connellsville and were going that way, so they struck a bargain immediately. Then, grunting and groaning, the four men pushed the car out of the rising stream and climbed inside. At Connellsville, Bob and Morgan caught another trolley for Greensburg, and less than 24 hours after their long-planned trip had begun, they arrived back home, content to help win the war. ANGLER

Writer Mike Sajna lives in Irwin, Pennsylvania. Bob Runk and Morgan Rider continued to fish through the 1940s and 1950s, until Morgan's job took him to Buffalo, New York. Morgan Rider died in 1970. Bob Runk founded the Pittsburgh Fly Fisher's Club in 1952. He retired in 1978 after a 37-year career as a chemist with Westinghouse. He occasionally still fishes Dunbar Creek. Bob Runk will be 77 years old in September.

Wolves in the Weeds

by Jeff Mulhollem

They glided up to the dock in the metallic flake-painted boat as we strapped my canoe to the top of the truck, and I hailed them more out of curiosity than friendliness.

"How'd you do?"

"No good," one said.

"Haven't even seen a bass," the other answered. "All we caught were those pickerel." The way he spat out "pickerel," he made it sound like a dirty word. "Slimy snakes."

"Nothin' but 18-inch hammer handles," the first said. "This place is just full of them."

My friend and I, who come to this Centre County lake regularly just to catch 18-inchlong pickerel, exchanged glances and burst out laughing, bringing hostile stares from the bass busters now tying up their expensive boat. Unlike them, we had an enjoyable, action-filled day, hammering the "hammer handles." We even managed to land a few nice bucketmouths, and unusual for us, had killed several chainsides nearly two feet long for dinner.

The pickerel that day roamed the weed-infested shallows like a pack of wolves in search of hapless prey or a well-presented lure. We found them in the thickest cover, tight against stumps, fallen trees or beaver lodges at the water's edge. We lost as many as we caught.

Pickerel eat most anything. A live shiner under a bobber tossed to a pocket in lily pads has long been a reliable method for taking them.

Wolves in the weeds, that's the way I regard pickerel. I love to eatch them on light spinning tackle or on a fly rod. Unlike their larger cousins, the northern pike and muskellunge, pickerel merit little attention and less respect from fishermen in Pennsylvania, or anywhere, for that matter. Many anglers regard them as trash fish, like the pair we met on the day I described, and that's a shame.

For where they are found in abundance, the water wolves provide lively sport. At times, they hit a lure as hard as any fish that swims. Although they are not great fighters, pickerel put up a respectable struggle and—most people don't realize—are a sweet, flaky table treat. Pickerel taste much better than pike or muskies, although when filleted, the "Y" bones must be removed with an extra cut, just like those of its bigger cousins.

Fish Commission statistics show that most big pickerel are taken through the ice. Most people don't realize that they are as much a fish of streams and rivers as lakes and ponds.

The Fish Commission has stocked pickerel. The fish never were found west of the Appalachians. They were native only to the Delaware and Susquehanna basins. But now they can be found all across the state.

Pickerel eat most anything, from frogs to insects, but their favorite food seems to be small fish. A live shiner under a bobber tossed to a pocket in the Iily pads has long been a reliable method for taking them. I enjoy pitching spinning lures with a lightweight outfit or streamers on a fly rod.

Favorite lures

If a pickerel could pick its favorite lure, a spinner would probably be at the top of its list. Unfortunately, pickerel most often make their homes in weed cover and structure that quickly foul or hang up a spinner. To be truly effective, a good pickerel lurc must be weedless.

Time-proven producers like Rapala and Rebel minnow-imitating plugs take fish on

a spinning rod, as do jig-and-pig combinations, spinnerbaits and an assortment of spoons.

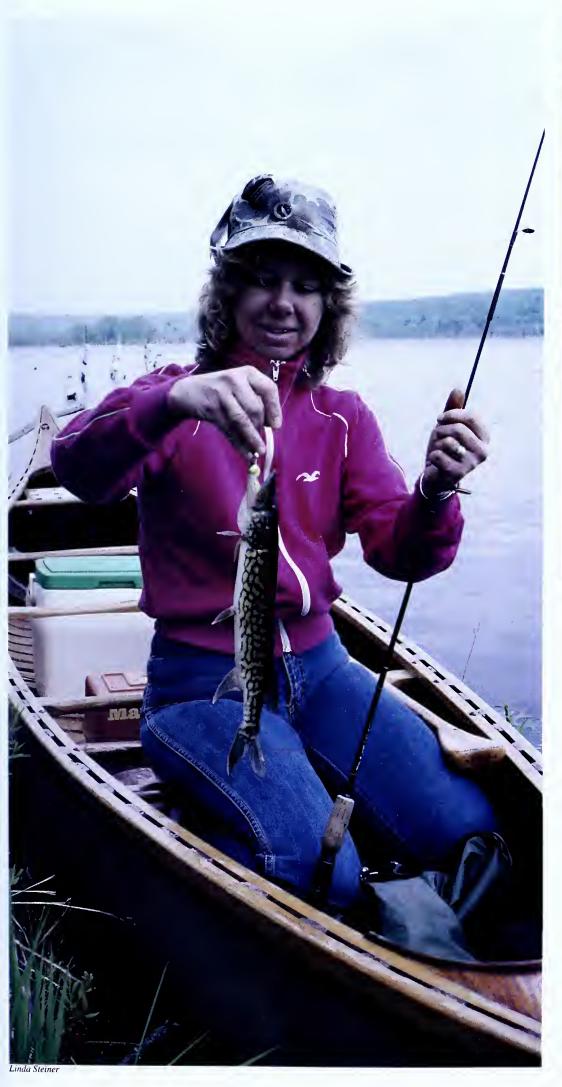
My favorite lure for taking pickerel is a Texas-rigged plastic worm fished weightless that almost never hangs up and can be crawled over and through the thickest tangles. Like bass, chainsides don't seem to have a consistent color preference, with nearly every shade of worm to their liking at one time or another. I like purple, motor oil, black and chartreuse.

Many pickerel that hit the worms are not hooked, and we often retrieve neatly sliced off portions of worms, victims of the chainsides' sharp teeth. Occasionally, bigger pickerel cut the line. We have experimented with trailing hooks, tandem rigs and wire leaders or shock tippets, but have found what they make up for in hooked fish they lack in hangups and aggravation. So we stick with the standard Texas-rigged worms we use when bass fishing and live with the short strikes.

On a fly rod, pickerel are lots of fun, and any streamer or bucktail with lots of flash will attract them. It seems that bigger streamers lure bigger chainsides, as you might expect. If you can buy or tie up some of these patterns designed for pike, any color so long as it's red and white, you will be in for some action.

Hotspots

The biggest pickerel recorded taken in the Commonwealth last year weighed six pounds, eight ounces, and was caught in Little Pine Creek Dam in Lycoming County, a waterway best known for its trout. Lake Jean in Luzerne County produced a fourpound, nine-ounce pickerel. A four-pound, one-ounce chainsides was caught in Shohola Lake, in Pike County, and a four-pound, one-ounce fish was taken at Middle Creek Lake in Snyder County. A five-pound, fourounce pickerel was caught at Shohola Falls Reservoir, a four-pound, eight-ouncer was landed at the Delaware Canal in Bucks County, and a four-pound fish was caught at Canoe Lake in Blair County.





Linda Steine

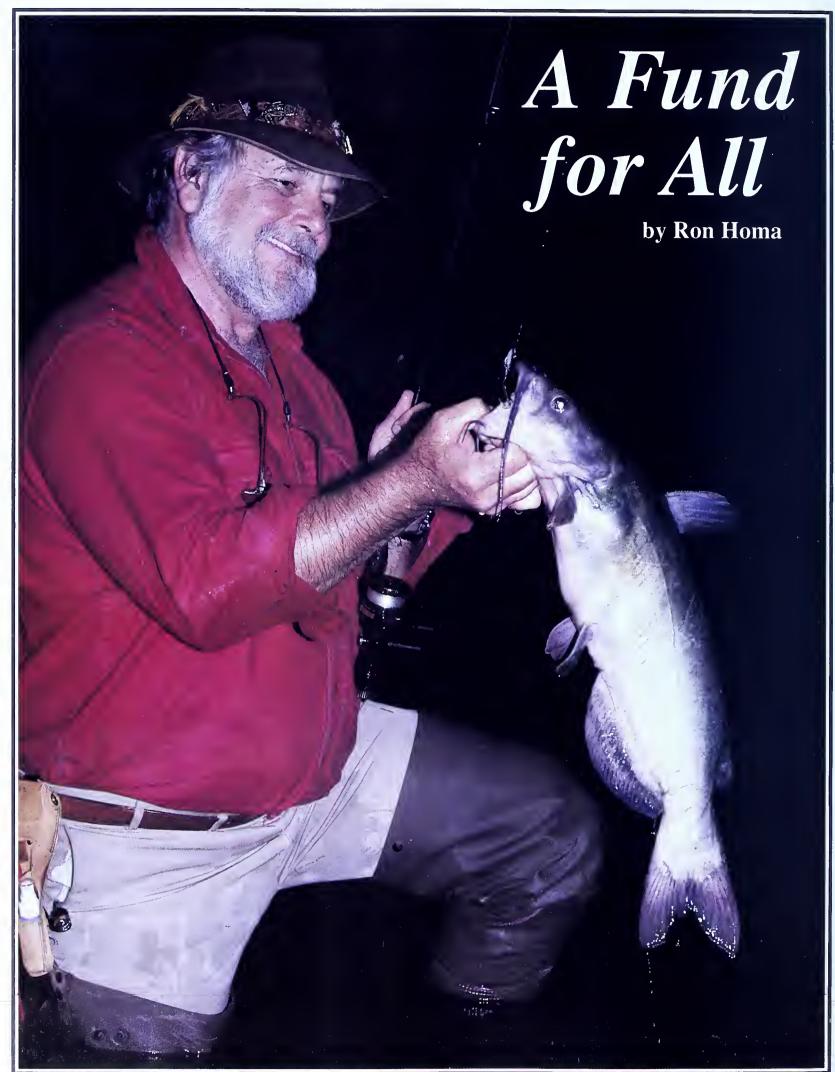
In many waterways, pickerel average 18 to 20 inches. This pickerel (left) nailed a jig tipped with a yellow plastic tail. Above, a stream pickerel fell for a crankbait early in the season.

So some big pickerel are around. But in most lakes pickerel seem to average less than a pound, about 18 to 20 inches in length.

In my favorite pickerel lake, we pole slowly through the weed-infested shallows in a john boat, pitching plastic worms or streamers next to logs and stumps. We usually see a hungry pickerel coming, a tell-tale wake closing in on our offerings. They normally hit viciously. It's always exciting fishing, and we usually take a few nice fish, but we never see anyone else doing it. For youngsters, especially, it's a fun way to spend a day.

For a change of pace, search for the wolves in the weeds. If you previously looked down on pickerel, it may change your outlook.





The alarm clock rings—just a few hours until daylight on the morning of your favorite opening day. But you probably didn't sleep very well, landing a few fish in your dreams, wondering if it was time to get up yet, or if that old alarm clock still worked.

Now you wonder if you forgot something, even though you went over your checklist when gathering up your tackle the night before. "Did I pin the license on my fishing vest, or did I put it in the tackle box? Are the minnows still active, and should I have changed the line on that one reel?"

Rising, you begin to feel a little more secure as the count-down to the launching site draws near. However, your anxiety level rises as you anticipate the day you were waiting for all winter. This anticipation level cannot be explained to a nonfisherman—you either experience it or you don't!

It's finally that time, as you and your friends pull your boat and trailer into the Walnut Creek Access Area. There's a cool breeze coming off the lake as small white caps hit the shore. "What a great place this is! What would we do without it?"

There's time to spare while you wait for the pairs of fishermen ahead of you to launch their boats. You wander over to read the rules and other information about fishing in Lake Erie. Another sign noting that the site was developed by the Fish Commission and the National Park Service with the help of a grant from the Land & Water Conservation Fund seems vaguely familiar. Then, it's time to launch and you're off on another great day of fishing with your friends.

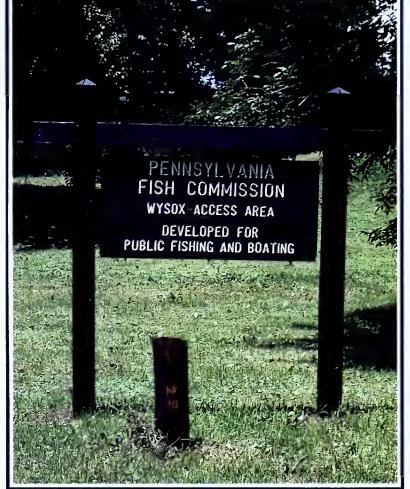
This is how we feel on the special opening day, whether it's for salmon, trout, bass or the first signs of the shad run. We appreciate the many areas that the Commission provides to satisfy our needs and demands for quality recreational facilities. But do we really know how the system works or where the money comes from? The answer is probably no. We are all too busy working and trying to squeeze in our recreation as best we can.

This is the 25th anniversary of the Land & Water Conservation Fund (L&WCF), so take a look at what it has done for us. The L&WCF has distributed more than \$7.5 billion to federal land managing agencies and to state and local governments for parks, recreation and conservation purposes. It is one of the most significant recreation and conservation legislative accomplishments in American history.

The Fish Commission, in partnership with the National Park Service, which administers the program, has provided many facilities over the years that have increased the fishing opportunities. It has acquired and developed fishing and boating access areas, and various improvements and new construction at several fish culture stations. The Commission has attempted to provide access in all geographic areas of the state so that everyone has quality fishing opportunities.

The Walnut Creek Access started back in 1972 with the acquisition and development of 14 acres. Now it provides access to the quality fishery on Lake Erie.

At the other end of the state is the newly developed 22-acre Frankford Arsenal Access in Philadelphia, the largest urban boating and fishing access area in the country administered by a state agency. This area provides access to the Delaware River for fishermen living in the inner city, and includes a fishing pier that accommodates the handicapped. There are many other areas scattered throughout the state, including the Linden



PA Fish Compussion photo

Some 30 access areas and Commission fish culture stations have received about \$5 million in L&WCF assistance since the program began 25 years ago.

Access in Lycoming County, Blue Marsh in Berks County, and the Applewold Access in Armstrong County.

L&WCF also helped provide improvements to fish hatchery facilities and new construction, to meet the ever-increasing demands for coldwater fisheries, particularly the popular stocked trout fishery.

Where the money for specific projects and programs comes from is always a topic of discussion, particularly when it involves taxes. The L&WCF has been unique because 90 percent of the funds don't come from tax dollars. The money comes from the revenues from oil leases on the outer continental shelf. Private industry is, in effect, helping to fund our recreational opportunities, including state game lands, innercity recreation areas, natural areas and a host of other outdoor recreation lands and facilities.

To date, nearly \$5 million has gone into Pennsylvania boat launch areas and fish hatchery land and facilities since the beginning of the program. Luckily, many of the areas were developed in the early years of the program when the dollar bought a lot more than in today's market.

The important thing to note as a fisherman and conservationist, or as one who enjoys other outdoor recreation pursuits, is that the areas receiving L&WCF money are "protected in perpetuity" and are there to stay for your use and enjoyment.

Now you know more about funding sources the Commission uses to provide the kind of quality fishing experiences we all want.

Ron Homa is a supervisory outdoor recreation planner for the National Park Service in Philadelphia. For additional information on this topic, see Commission Executive Director Edward R. Miller's "Straight Talk" on page 2 of the June 1989 Angler.



Think of flipping for bass and you might conjure up an image of southern fishing in a backwater slough, under some hanging Spanish moss, dropping a heavy jig into some stained or muddy water. While true, that image limits what flipping is, where it can be used for catching more bass and how you can apply it to Pennsylvania bass rivers, lakes and reservoirs.

Born in the western states, flipping is actually nothing more than a high-tech version of southern doodlesocking to jig a lure or bait with a cane pole. Flipping is a special technique that doesn't take the place of casting with revolving spool or spinning tackle, but it does complement these fishing methods to put more bass in the boat.



Flipping does not involve casting, but instead uses a long rod to swing the line forward and drop a lure into a specific spot just ahead of the boat. To swing the lure properly to the desired target, it also requires holding and controlling the line in one hand, and holding the rod in the other. To relate it to a popular form of small-stream Pennsylvania trout fishing, the result is not unlike using a fly rod and short leader to swing a fly into a snag-filled lair that would be impossible to reach with a normal cast.

Part of the success of flipping is a result of the habits and habitat of largemouth bass. Largemouth bass relate to wood, and in fact they always seek wood structure in which to live. Thus, standing timber, blowdowns, brush piles, stump fields, submerged logs, log jams, boat docks, duck blinds, boat houses, piers and bridges make ideal spots for bass and for bass fishing. Usually bass stick tight to such structure, making a cast lure presentation impossible.

The other problem with these spots is that bass are often in the very thick of a brush pile, hollow center of a rotten tree stump or middle of a tangle of downed tree limbs. The chances of getting a lure into the perfect spot on the first and most important cast are slim.

The answer—and substitute for casting—is flipping. Flipping allows the presentation of a lure not within feet of a target, or even pie-plate range, but within inches—or fractions of inches—of the selected spot.

Advantages

The advantage of flipping in Pennsylvania is that any bass water is usually full of ideal spots for such fishing. Bass rivers are typically bordered with blowdown trees, log jams from upstream flooding, undercut shorebound tree roots, downed logs and woody piles of debris. Lake and reservoirs feature similar structure, along with boat docks, duck blinds and downed trees. On Raystown, for instance, it has long been the practice to cut some shoreline trees and to chain them to the trunk to provide permanent bass fishing structure for bass fishermen. The result is a perfect situation for flipping.

Flipping is most commonly used for largemouth bass lake fishing, but it can also be practiced on rivers where debris,

roots and downed trees present suitable targets.

And although you can flip with spinning tackle, it is rare and the advantages of casting tackle make this almost universally the choice of experienced anglers.

Rods, reels

Flipping might seem to be simplicity itself in the way in which lures are fished. You simply swing them into a spot. But it is easiest when you use special flipping rods, reels and lines. Long rods make swinging the lure easier. Specially designed flipping rods of 7 1/2 feet are standard. Some anglers prefer the newer eight-foot models, and for smallmouth bass fishing, a seven-footer is often preferred for the smaller fish and lighter fishing.

Flipping rods have longer rear grips for greater leverage when a fish is hooked, trigger reel seats, heavy guides and a powerful action that not without reason has often been compared to a pool cue. What action that is noticeable is a fast tip, with heavy power in the lower three-quarters of the rod.

Only one company (Shimano) makes a specialized flipping reel, but Zebco, Daiwa, Abu-Garcia and others all manufacture casting reels with a "flipping switch." This flipping switch, always found on reels with a thumb bar casting release lever, changes the internal mechanism of the reel so that the thumb bar does not lock into place until the handle is turned, leaving the reel in free spool. Instead, it allows control of the free spool of the reel.

Depressing the thumb bar places the reel in free spool. Releasing the thumb bar locks the spool and the reel reverts to the pre-set drag mode.

The specialty Shimano reel works only this way, is made only for this method of line release and cannot be used for casting. It also has limited line capacity, because the close-in flipping technique does not require large line capacity. As a result, it also lacks a level wind.

Standard reels with the flipping feature can be used for both casting and flipping, but most anglers rig one of these reels for flipping and spool it with the heavier line favored for this method. Any size line can be spooled. However, the fish must often be horsed out of the

The advantage of flipping in Pennsylvania is that the Keystone State abounds with bass waterways in which flipping is productive.

structure immediately to have any chance of landing them. Thus, this method requires heavier-than-normal line.

Pennsylvania anglers might spool casting reels with 8- to 14-pound test, but 17- to 25-pound test is standard on flipping reels, and 40-pound test is not unknown. Favorite lines include the DuPont 14/40, DuPont Stren, DuPont 7/20, Berkley Big Game Flippin' and Pitchin' Line, Trilene XT, Trilene XT Solar, and Bagley AN40.

Lures

Because of the "drop and jig" type of fishing used in flipping, lures are also more specialized than the broad range used with casting equipment.

Crankbaits, weedless spoons, buzzbaits and spinners are out. Jigs, worms and tube lures are in, along with an occasional spinnerbait or structure spoon.

The reason is that jigs, worms, spinnerbaits and structure spoons can be worked in close using a vertical yo-yo jigging style to keep the lure in one spot to attract, entice or enrage a bass to hit.

Strong knots are important. Most anglers choose an improved clinch knot, Palomar knot or uni-knot.

Technique

Once the tackle is assembled, basic flipping technique for a righthanded caster is to hold the rod in the right hand with the thumb on the thumb bar, and release line about equal to the length of the rod (about seven feet). Keeping this amount of line hanging from the tip of the rod, pull more line from the reel so



C. Boyd Pfeiffe

that an extra three or four feet of line are in your hand. Then swing the rod from your body so that the lure acts as a pendulum and swings toward the target.

The swinging lure is just above the water, so it is easy to drop the lure precisely on the target. As a result of the low trajectory, there is little water disturbance as the lure lands. Also, because the lure is swung rather than cast, it allows you to make several attempts should one try not be precisely over the target. The lure does not land in these aborted attempts, so a bass is not alerted or frightened until the lure finally drops in front of him.

The long rod allows swinging the lure easily to the target; the extra line allows hitting targets 10 or 15 feet away from the boat. The line is not released by letting the line flow off the reel—instead, it is fed by moving the line hand to allow line to flow out of the guides. During this time, the thumb bar is depressed to help release line should any more be needed on the flip or to release line when jigging in a deep hole.

Once the lure is exactly over the target, the last bit of line is released and the lure dropped into the water. Usually this is a spot in a tangle or root system,

so the proper action is an up-down jigging motion. The long reach of the $7\frac{1}{2}$ - to eight-foot rod helps make this easy.

When a bass strikes, remove the thumb from the thumb bar to engage the drag and fight the fish or hoist it out of the cover. The method of landing often depends on the cover. Rough, tangled cover such as root systems or tangled tree limbs requires a quick hoist to get the fish out into the boat or into open water. Large fish can sometimes be skated across the top to get them to open water outside of the structure where they can be fought.

There are many variations in both tackle and technique to flipping. Bass pro and TV star Roland Martin likes to duct-tape foam rubber around the end of his flipping rod for added comfort when striking a fish while flipping.

Getting distance

He also uses a modified flipping technique—one of several possible—that ends up with a slight cast with line flowing from the reel for more distance. To help accomplish the distance, Roland holds the lure in his hand with the rod tip down and raises the rod while

Flipping requires swinging the lure to the target. A long rod and line held in the hand allows hitting targets some 10 to 15 feet away. When the lure is over the target, the line is released and the lure dropped into the water.

releasing the lure to swing the lure to the target and help pull line from the reel. More pitching, as it is sometimes called, it allows reaching out to distant targets, but it does not allow the repeated swings until the lure is right over the target.

Bass pro Charlie Ingram uses similar long-distance flipping, but in a different way. Charlie alternately raises and lowers the rod tip to swing the lure back and forth, pulling line with his left hand from the reel with the swing and placing the extra line in his mouth. On the final forward cast, he releases line from both his hand and mouth. The line-in-themouth trick allows for more distance, achieving the same result as Roland Martin's method.

Another method is to start the swing to work the lure back and forth, but then keep the rod almost level, alternately pulling and releasing line with the left hand to see-saw the line back and forth in a horizontal plane. The effect is almost like accelerating line with a double haul while fly casting, and the result with the horizontally positioned rod allows getting the lure into tight spots under and through brush, tree limbs and brambles along the shore that would otherwise block both casting and normal flipping.

One way to flip really involves a technique used in an underhand cast, along with the short-line flipping technique, but also makes for a more long-distance lure presentation. In this, you use a shorter rod and hold it at a low angle with only a short amount of line extending from the rod tip. Pull more line from the reel and hold it in the hand. Swing the lure in a tight circle, the circles made so that the line comes off the bottom of the circle when it is released. At the end of the flip, release the line from the hand to get the lure to the target.

This allows getting the lure to the tar-



C. Boyd Pfeiffer



Brush piles, stick-ups and rugged structure of all kinds make great flipping targets. Heavy line is a must to stand up to these places. You might go with eight- to 14-pound test line, but standard on flipping equipment are lines of 17- to 25-pound test.

get under brush and tree limbs. It does not allow the same distance as does a smaller underhand cast in which the reel, not a line-hand, is used.

Even if you don't have a special flipping rod and reel with a flipping switch, it is still possible to use this method to These anglers are combing a grassy shoreline for bass, flipping jigs as they go. Notice their long rods, which help them get the most distance.

Remember to move the boat slowly while you flip—you're practically right on top of the fish and a quiet approach is vital.

get more bass. Regular tackle is not as effective, but it can work in a pinch. The methods used are the same, but the reach is less and the power in the rod is reduced when you hang a big one in heavy cover.

Regardless of the method used, stout lures are a must. Smallmouth bass jigs for Pennsylvania rivers are often molded on light-wire hooks, but heavy wire or larger size hooks are necessary to hold the fish. Because the brush and structure allow little room for playing a fish properly, the strong line, stout rod and heavy hook are a must to get more fish into the boat.

Whether you're with or without the right tackle, flipping is still a worth-while method for taking more bass in any lake or river. It is no substitute for casting, nor with the limited lures used will it eliminate crankbaits and spinners. In the right circumstances, however, it can put fish in the boat when nothing clse works.

Pennsylvania Catfishing Seminar

by Darl Black

"Catfish," grunted my disappointed fishing partner when the fish finally came into view below the boat. "Just a darn channel cat." My buddy had been locked in battle with this big fish for better than five minutes.

I gave him a puzzled look. "You just engaged in a thrilling fight with a big fish that had your stomach tied in knots. At one point your drag was smoking. You were all excited when you thought you had a musky or a trophy walleye. Now you complain because it's a catfish? Hey, that fish deserves a lot more respect!"

Considered untouchable by some fishermen, members of the catfish family have taken a bad rap for years. In today's high-tech fishing society with emphasis on bass, walleye, muskies or salmon, many anglers view catfish as unworthy quarry.

Not so for those who specialize in fishing for catfish. They know that channel and flathead cats are powerful, elusive prowlers. You only need hook a big cat to discover that these fish are certainly not wimps!

Over the years I've tagged cats up to 10 pounds while fishing for something else; they fought well. Other anglers have related stories about hooking giant catfish that they simply could not handle, with broken line or stripped reels the result. I knew at some point I wanted to get serious about catfish. This may be the year. Join me as I seek advice from several Pennsylvania catfish experts.

Alan B. Kemp of Cheswick, Pennsylvania, has been catfishing for 25 years, mainly on the lower Allegheny River. "Many people out there are running around in fancy fishing boats with \$300 rod-and-reel combos. I believe they are missing some mighty exciting times bank fishing with friends for catfish. These fish really fight!"

Inky Moore in the Harrisburg area has been chasing cats on the Susquehanna River since 1965. "Catfishing provides my family a chance to get together, have a lot of fun, and end up with some good eating fish when we are done."

J. B. Kasper, a professional river guide, has enjoyed catfishing for 28 years on the Delaware River. "I've incorporated catfish trips into my guide business on the river. On a good night we might catch and release 60 to 70 cats."

My first question to the panel of anglers was basic. "What kind of catfish do you catch in each river system, and what is the size of the fish?"

All three seasoned catfishermen agree that the summer months are the best time for cats. More agreement:
The warmer the weather, the better the night fishing.

Kemp says, "We fish for channel catfish on the Allegheny River, although we occasionally catch a flathead. I eat the channels, but not the flatheads. My friends and I have caught flatheads up to 43 inches; they fight better than channels. But we have never weighed a flathead because we don't keep them. The channels run up to about 36 inches, weighing up to 15 or 18 pounds."

"We catch channel catfish in the Susquehanna," Moore says. "They range from small ones of 10 to 14 inches all the way up to 20-pounders. The biggest one we ever landed was a 23-pounder taken by my son. We have fooled some bigger ones we could not get in."

"In the lower Delaware River you get a lot of bullheads, and white and channel catfish," explains Kasper. "Once you get north of Trenton you pick up mostly channel cats. The biggest catfish are the channel cats that reach 15 to 18 pounds. White catfish get up to seven or eight pounds."

All three seasoned catfishermen agree that the summer months are the best time for cats. Moore catches cats on the Susquehanna from May through October. For the Allegheny River, Kemp prefers late July through August; his second best period is April and May.

"The best months vary a little more on the Delaware," says Kasper. "Summer, naturally. But if you fish the warmwater discharges on the lower river, you can catch them throughout the year with March a very good month. I find that in the spring right before they spawn, you can pick up the greatest numbers of cats."

During the summer months you should begin your catfishing in the evening. Kasper experiences the greatest catfish activity from sunset to about three hours after dark. Kemp schedules his summer trips to the Allegheny from about 9:30 p.m. to 1:30 a.m.

"We have the best fishing in the evening hours on the Susquehanna, and sometimes late into the night," says Moore. "It seems the warmer the water, the better the night fishing. However, in May you can catch catfish during daylight hours."

Location

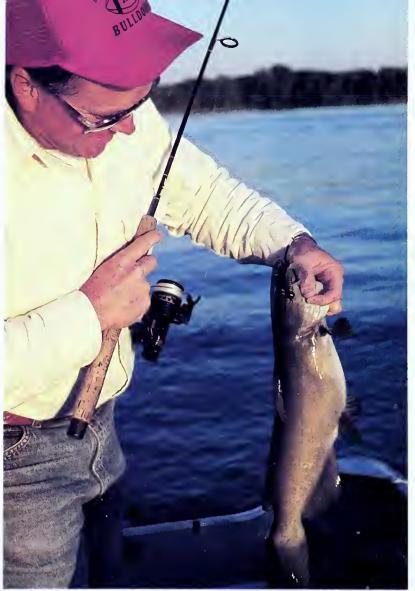
For anglers who believe catfish are associated with mud bottoms, check out what the experts had to say about location.

"We look for a rocky bottom," says Kemp. "If there is a weed bed nearby, so much the better. My best spot has some underwater structure in about 12 feet of water; I believe it is a wrecked car in addition to several submerged boulders."

"A rocky bottom with a good flow of water—that is where you find hungry channel cats in the Susquehanna," explains Moore. "The fish move into the rocky areas to feed. If you find a gravel bar or a rock ridge, these are good spots, too. In the Susquehanna there are shale ridges running out into the river all over the place. Anchor your boat immediately downstream of a shale ridge and fish the pool. Catfish tend to hold at the head of a hole or pool."

According to Kasper, the edge of a deep channel is the best site for daytime fishing on the tidal portion of the Delaware. Toward evening, the cats move onto the shallow flats, letting the shore





Darl Black

angler get a crack at them. In the upper Delaware, Kasper targets the points of land extending into the river, downstream bars below islands, and the sandy flats.

All three anglers long ago discovered mud holes are not the place to find catfish. Channel, white and flatheads can be found over hard-bottom areas. And of the three, the channel cat has a decided preference for strong currents.

River conditions

River conditions change frequently. Water flow and turbidity affect species in different ways. Catfish bite generally more reliably through a wide range of river situations than other species. However, there are certain conditions that really turn on the cats.

Kemp likes the Allegheny running a little high, but not too high. "I've never had any luck when the river flow reaches the point where it starts to go over the banks. The best water color is a little murky, which is typical of the lower Allegheny."

"A little stain doesn't hurt at all," says Moore, "and the flow should be normal or a little bit high. Twelve to 14 inches above normal flow is good." Moore also likes the main river running fairly clear with the tributaries running turbid, a situation with which Kasper concurs.

"This is a circumstance that really pays off," explains Kasper. "It is a common situation on most rivers—a muddy break-line. If you have a clean river flow and a sudden heavy thunderstorm quickly raises the small streams entering the main river, you have a mud line between the clean river and dirty tributary. That tributary flow brings a lot of food that concentrates the cats. The fish pile up at the edge of the muddy water looking for insects, worms and so forth."

Catfish bite more reliably through a wide range of river conditions than other species. However, water that's a little higher than normal can really turn them on.

Tackle

Knowing first-hand how hard a 10-pound channel catfish fights, I knew if I ever hung a truly big cat I would need a hefty rod and line to land it. So I was curious what kind of tackle these guys used.

Kemp uses a 6 1/2-foot casting rod with a free-spool baitcasting reel. He never drops below 12-pound-test monofilament, and generally uses 17-pound test. "There's no science to the tackle selection like there is when you go walleye fishing. You just want a tough outfit that can stand up to cats."

On the Susquehanna, Moore leans toward lighter tackle for the typical two- to four-pound channel cat. He uses six- or eight-pound test on a spinning rod with a size six hook. "On nights we start to pick up cats over six pounds, I switch to my surfcasting outfit to handle the big ones," he says.

"Guys catch catfish on just about anything," says Kasper. "You don't need to get too fancy." In the lower river where the cats tend to run larger, Kasper uses a conventional casting outfit. In the upper river he catches most of his cats on spinning tackle with eight- or 10-pound line. Kasper uses a size two short shank hook and sliding sinker with a sinker stop about two feet from the hook, allowing the line to slide through the sinker when a catfish takes the bait.

Bait

Most of the larger cats I have caught grabbed a shiner while fishing for walleye or pike. (Guess that should have told me something about the preferred habitat of cats, too.) Yet, in areas of the country where catfishing is popular, a concoction known as blood bait is the number one offering. I hoped these Pennsylvania experts would tell me I didn't need to collect and age blood bait to catch big cats. My prayers were answered!

"I catch a lot of cats under six pounds on live minnows or with a white streamer fly," Moore says. "Worms are a good bait if the water isn't too turbid. But in turbid water I prefer a bait that has a longer lasting odor and taste. Chicken livers and chicken necks work really well. When using a chicken neck, I cut it into segments, make a little hole in the bone with an awl, and slip the hook through it."

If you can't get chicken parts, Moore suggests a recipe he's used for years. Mix a box of strawberry Jell-O, soak cotton in it, pull off a piece, form it into a ball, and put a hook through it.

"But the most surprising bait is raw kielbase—Polish sausage. It holds its odor for a long time and stays on the hook pretty well," says Moorc. (Now that sounds like my kind of bait! While waiting for a cat to bite, I can cook some of the extra kielbase over an open fire!)

Kemp doesn't get into exotic catfish baits. Instead, he traps shiners or creek chubs (four to seven inches long) from a nearby stream, kills them, and lays them out by the lantern for about a half-hour. He keeps them wet so they don't dry out.

"We sew the hook through the dead stink bait," explains Kemp.



In the Susquehanna and lower Allegheny, look for river portions with a rocky bottom for the best catfish action. On the Delaware, try the edge of a deep channel.

"I use a size I hook on a steel leader. Pull the hook and leader through both lips of the chub, then stick it through the back dorsal area, bringing it through the thick part of the body and out the belly. Then stick the hook point in the body near the tail. We've had catfish break the line if we don't use the steel leader to sew the bait."

Depending on current flow, Kemp uses weight ranging from a couple of splitshot to a 3/4-ounce sinker. Be sure to keep the weight about two feet from the bait to allow the chub to bounce in the current.

Kasper says the number one bait on the Delaware is herring. The bait is collected in the spring when the herring make a spawning run. It is marinaded in anise oil and frozen for use through the summer.

"Fresh cut bait is good, too," says Kasper. "Take herring or other baitfish and cut strips from the sides. Some guys use shrimp, but it is pretty expensive now. Others have commeal recipes. Plain nightcrawlers are good, too. Catfish take just about anything; they aren't fussy."

Meal preparation

Kasper does not eat catfish, and simply releases the fish he catches. However, Kemp and Moore find channel catfish a delicious meal when prepared properly.

"If I'm planning on eating catfish, we don't keep any fish over four pounds," says Moore. "The bigger cats have an oily taste. I always discard the meat on the shoulder right behind the head. It is a yellowish fat that gives the cats a bad taste.

"We wrap them in foil with butter, salt and pepper, and slices of onion, green peppers and tomatoes. Lay it on the grill and cook it in the foil. That's some good eating!"

Kemp agrees with Moore. "The quality of channel catfish is fantastic. The only thing you have to do is soak it in milk overnight. It takes the strong taste out of the fish. The bigger cats, those over 24 inches, are pretty strong, so steak them and put them in marinade."

Catfishermen point out that their sport is different from tossing spinnerbaits for bass, backtrolling



Darl Black

for walleye, or jerkbaiting for muskies. Catfish anglers select a location and setup their rods for several hours. It is a waiting game rather than a chasing game. Some nights the big cats bite; other nights only the small catfish seem to be in an area.

Usually undertaken in small groups, catfishing is as much a

social activity as a fishing outing. For many it is a perfect family get-together. Not only does conservation fill the time between catfish pickups, but this style of fishing provides everyone an equal chance to tie into a big cat and experience the thrill of a lifetime. Catfish, after all, are gaining respect among more and more anglers.



Pennsylvania Catfish

The members of the eatfish family in Pennsylvania include the channel, white and flathead catfish, as well as the brown, yellow and black bullhead.

The flathead catlish is the largest cat in the state, reaching weights over 25 pounds. It is native to the Ohio River drainage, and is not found in eastern Pennsylvania. The state record is 43 pounds, 9 ounces taken from the Allegheny River near Pittsburgh by Seymore Albramovitz in 1985. It is a solitary catfish whose numbers had been reduced as a result of pollution in our large rivers. With cleaner water in the Allegheny and Monongahela rivers, flatheads are now making a comeback.

A flathead catfish is easily recognized by a low, flat and broad head, and a square tail. The flathead is yellowish-brown on the upper body to pale gray on the belly. The sides are usually mottled

with shades of brown.

The channel catfish is the second largest cat found in Pennsylvania and is distributed statewide in both rivers and lakes. Jim Rodgers pulled the record channel catfish from the Allegheny River near Oil City in 1970. It weighed 35 pounds with a length of 39 inches. Eight- to 12-pound channels are fairly common. Channel catfish are bluish-gray on the back and silvery-gray on the sides with a white belly. The irregular small dark spots on the sides usually disappear on larger specimens.

The white catfish resembles the channel cat in both appearance and habitat, although it prefers slower currents than the channel cat. The white does not have the irregular dark spots on the sides, but like a channel cat, it has a forked tail. It may have mottled gray or blue markings, thereby leading to the local name of "blue" catfish. It does not grow as large as channel

cats. The Commission does not maintain a state record for white catfish. It is native to waterways in eastern Pennsylvania, but has been introduced into some waters of western Pennsylvania.

Bullheads are widely distributed throughout Pennsylvania. All three—the brown, yellow, and black—look alike except for varying coloration. Bullheads do not come close to the size reached by other catfish. The average bullhead is 12 to 15 inches. The state record was caught by Eddie Lasorda from March Creek Lake in 1983. It weighed 4.23 pounds and was 16.5 inches long.

Catfish use their barbels—the "whiskers"—to help locate food. The barbels are not stingers as many fishermen believe. The sharp spines on the dorsal and pectoral fins may inflict a painful puncture wound if care is not exercised by the angler.—*DB*

Pennsylvania's Biggest Channel Catfish:

Where, When and How Anglers Catch Them

by Art Michaels

In 1989, Pennsylvania anglers registered 114 citation-sized channel catfish in the Angler Recognition Program's Senior and Junior Angler's awards. Here are the numbers of channel catfish caught in each month:

January, 0; February, one; March, two; April, two; May, 17; June, nine; July, 19; August, 35; September, 26; October, three; none was caught in November and December.

Here are the top seven waterways that boasted the highest number of citationsized catfish:

Lake Arthur, 59; Susquehanna River, 11; Lake Nockamixon, six; Gifford Pinchot State Park Lake, three; and Beltzville Lake, Blue Marsh Lake and the Delaware River each gave up two.

Anglers caught these big catfish on a variety of baits and lures. Minnows fooled 45; nightcrawlers took 25; liver tricked 13; bluegills caught 10; suckers nailed two; and cut bait, shrimp, a leech, corn, and a waxworm each accounted for one. Lures took 14.





Biggest catfish of 1989

Alfred Henico, of Hastings, caught the largest channel catfish in 1989 in the Angler Recognition Program. The 23pound, 12-ounce brute came from Glendale Lake on August 10, 1989. Henico fooled the fish on a gitzit.

Are you an award-winner?

Anglers aged 16 and above qualify for Senior Angler's Awards with channel catfish that weigh at least 10 pounds. Anglers under 16 years old qualify for Junior Angler's Awards with channel catfish that weigh at least eight pounds.

Complete details of the Fish Commission Angler Recognition Program are available in a four-page brochure. The publication includes information on state record fish, the Husky Musky Club, biggest fish of the year and Angler Awards.

For a free copy, contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673. Please include a stamped, self-addressed business-sized envelope with your request.

State record

Jim Rogers, of
Oil City, caught
the current state
record channel
catfish in 1970.
The monstrous
fish weighed 35
pounds and
measured 39
inches long.
The action took
place in the
Venango County portion of the
Allegheny River.



Anglers took more big catfish from Lake Arthur, the Susquehanna River and Lake Nockamixon than from other waterways. Minnows and nightcrawlers fooled more big catfish than any other offering.



A Favorite Stonefly Nymph



by Chauncy K. Lively photos by the author

Stoneflies comprise a significant part of the bottom fauna in many trout streams. Their requirement for pure, well-oxygenated water and their inability to withstand many kinds of pollution make them ideal barometers

of water quality. Environmentalists have recognized their value in this regard and often study their distribution in streams where they question water quality.

At rest, adult stoneflies, with their wings folded flat over their bodies, are easily distinguished from sail-winged mayflies and tent-winged caddises. Their flight is generally slow and cumbersome—as if they were carrying a heavy load—and their two pairs of beating wings show a distinct separation.

Although stonefly nymphs are generally associated with boulder-strewn riffled water, their habitat may actually be diverse. Certain large species can be found in decayed leaves and detritus in quiet headwater pools, and others may frequent the chinks between pebbles in gravel-bottomed streams devoid of boulders.

The medium- to large-size nymphs of the family Perlidae are well-adapted to life in fast-flowing water. Their flattened bodies offer minimal resistance to strong currents and two claws on each foot let them cling tenaciously to the underside of rocks. These nymphs, particularly those of the genera Acroneuria, Phasganophora and Paragnetina, are colorful creatures with gaudily marked wing cases and in several species, dark transverse stripes over the back of the abdomen.

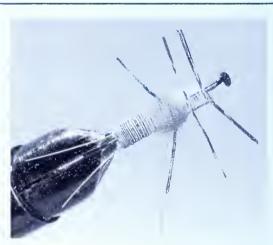
Stonefly nymphs always have two tails, and their abdomens are generally less tapered



I To the underside of the shank of a size 10, 3xl hook, cement a rectangular underbody of thin-sheet aluminum or plastic. When set, clamp the hook in the vise and tie in the thread behind the eye. Wrap the thread in close turns to the mid-shank and let the thread hang under the weight. Cement the hackle rib tails to the bend of the underbody at the rear. Then continue to wind the thread to the rear of the underbody.



2 Select two large stripped ribs from brown or dark-ginger hackles, soak them in water and tie them in together at the rear of the underbody, with the hackle tips extending over the eye and the long ends reaching behind the bend. Wind the thread smoothly over the ribs to the mid-shank and trim the excess tips.



Coat the abdomen with Flexament and wind the ribs in close turns to the mid-shank. Tie them off securely and trim the excess. Tie in each of the three turkey fibers at their centers, equally spaced as legs over the thorax area. Trim the legs to the proportions shown. Wind the thread back to the fore end of the abdomen, wax the thread and apply a little dubbing. Wind the dubbing one turn behind and one turn in front of the rear legs.

than those of mayfly nymphs. The tails are separated at the base at the blunt posterior end of the abdomen.

This Perlidae nymph is a generic pattern that represents a composite of several large stonefly nymphs found in streams of the northeast U. S. It is a basic pattern I've been dressing and using for many years, updated from time to time to take advantage of new, more durable materials.

The distinctive shape and flatness of the naturals are achieved by winding the body materials over a flat, rectangular underbody cemented under the shank. For a size 10, 3x long hook, I use an underbody 3/32-inch wide and 1/2-inch long of thin sheet aluminum or thin plastic. I often weight the pattern slightly by cementing a short strip (as long as the thorax) of flat wraparound lead to the underside of the fore end of the underbody.

Keeping the weight underneath the shank lowers the center of gravity and ensures that the nymph will drift naturally in the current without flipping over on its back. If you want more weight than thorax weighting provides, substitute a 1/2-inch length of wraparound lead for the aluminum or plastic underbody. Wraparound lead is the correct width for the underbody. Just be sure to cement it underneath the shank.

The two tails are dressed from the stripped ribs of two small brown hackles for an effective length equivalent to that of the underbody. The tails are cemented in place on the rear of the underbody.

The abdomen is fashioned from the stripped ribs of two large brown or dark-ginger hackles, wound closely to simulate the light/dark "quill" effect of the natural's transverse stripes. Wind the ribs by hand but keep your dubbing needle handy. The ribs sometimes tend to separate while wrapping, and you can use the point of the needle to keep the wraps close and tight.

Large hackle ribs sometimes split when wound, so before you use them, soak them well in water. For maximum durability, coat the thread-wrapped underbody with Flexament before wrapping the ribs.

After you set the legs in place, making the compound wing cases and thorax dubbing follows a specific routine. First, prepare a wing case strip by sanding a small sheet of polyethylene film on both sides until the gloss is gone. Then cut a strip slightly wider than the underbody from the sheet and tint it with a tan permanent marking pen. Then cut a notch in one end of the strip. Wind the fur dubbing from the fore end of the abdomen to one turn in front of the rear legs. Then set the wing case strip in place.

Instead of dressing separate wing cases, back-fold the single strip in front of the rear legs and again in front of the middle legs, with dubbing wound between folds. After the second back-fold, wind the dubbing forward, ending one turn in front of the forelegs. Then bring the poly strip forward and tie it off behind the eye. Thus, the metanotum, mesonotum and pronotum are formed with a single strip of poly film.

The Perlidae Nymph is not difficult to tie, although the number of construction steps may exceed those of more traditional dressings. Still, it is very rugged and capable of withstanding many toothy onslaughts. In the photos, the pattern is dressed on a long-shank size 10 hook, and it is my favorite size. Nevertheless, it also fishes well in sizes 8 and 12, so let you own requirements be your guide.

Perlidae Stonefly Nymph Dressing

Hook: Sizes 8 to 12, 3x or 4x long. **Thread:** Yellow 4/0 monocord.

Underbody: Thin aluminum or plastic strip (1/2-inch long and 3/32-inch wide for a size 10 hook).

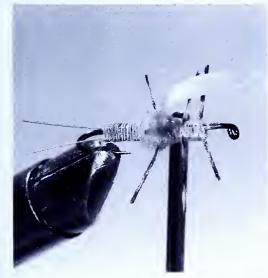
Tails: Stripped ribs of two small brown hackles.

Abdomen: Two stripped ribs of large brown or dark-ginger hackles.

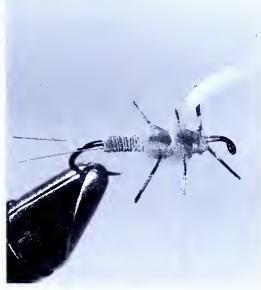
Legs: Three fibers from turkey wing primary feather, coated with Flexament for durability.

Thorax: Amber fur or synthetic dubbing.

Wing cases: Polyethylene film.



For wing cases, prepare a strip of polyethylene sheet and lay it lengthwise over the thorax, with the notched end extending slightly over the fore end of the abdomen. Bind it to the top of the shank with one firm turn in front of the rear legs. Then fold the strip back over itself and wind two turns over the edge of the fold. Apply quickdry cement to the winds over the fold.



5 Apply a little more dubbing to the thread and wind it forward, ending with one wind in front of the middle legs. Pull the strip forward over the dubbing and tie it down with one turn in front of the dubbing. Again, back-fold the strip as in step 4 and apply cement to the winds.



Apply additional dubbing to the thread and wind it to one turn in front of the underbody. Pull the strip forward over the dubbing and tie it off behind the eye. Trim the excess. Whipfinish the head, trim the thread and lacquer the head. With a fine-pointed black marking pen, make swirly marks on the wing cases. Optionally, bend joints in the legs with tweezers.

30 Tips for Canoeing Camping by Tom Carney Have you ever enjoyed the tasty campsite drink of freeze-dried Posless P

Have you ever enjoyed the tasty campsite drink of freeze-dried omelette that you've re-hydrated in cool water but that you've not been able to cook? How about that less-than-immense feeling of security you get during a rainstorm while cooking dinner in the protection of your tent, when you just happen to spill a couple of spots of grease, and you're in the middle of an area where skunks, raccoons and chipmunks abound?

Out there, miles from the nearest paved road, even more miles from home, you know that you've been lying through your teeth each time you've tried to convince a non-camping friend that in this life of lives, time spent roughing it in the company of Ma Nature is one of the greatest sources of peace and reward that one can grab for himself.

Other than fishing, preparing food, eating and sleeping, there's not much to do if you're stuck in a base camp and the water's too rough for day trips. So you have a lot of time to think. And what do you think of more often than anything else?

Well, I can tell you what we thought of, my father-in-law and I, on our first canoe-camping trip. We thought of all the different ways we were miserable and how we might prevent such hardships on our next venture.

His first idea was to leave me behind next time, but I'm not so sure that you would find that to be a workable tip. So what I've done is to list the most practical of the ideas we discussed that gray, rainy day while we sat on a small river island, trying to start a fire of wet firewood with a butane lighter that just wouldn't stay lit in the wind.

Some of the suggestions are holdovers learned during the old backpacking days. A few more are directed especially to the traveler who is leaving his own gear behind and is entrusting himself to an outfitter. Still more of the points are those that can be taught only by good old misery and experience.

These tips were assembled with an easy voyage in mind, one on which extra weight would not be a burden. Of course, if your itinerary calls for a lot of whitewater or several portages, you might have to reconsider some of the following recommendations. Use these ideas for all your canoe trips on Pennsylvania rivers.

An extra water bottle might be a welcome addition. Chances are, you will be mixing some kind of drink, and it's just easier to have another bottle of plain water available for other uses. You'll probably free up a cooking pot that way, too.

No matter how pristine you envision the trip, it's a good idea to pack a small backpacker's stove. Firewood might be scarce, especially if you are visiting a well-traveled area. Also, the wood might be wet. Even if you are going to tough it out on a cold, rainy morning and build a cook fire, the stove will heat some water in a hurry for that welcoming cup of coffee.

A lightweight, portable camping grill can make life easier for you if you are planning to do your cooking over an open fire at primitive campsites.

Both a camp saw and a small camp axe will come in handy. The saw might allow you to cut small logs, but the axe lets you split the logs into sizes that burn more readily.

Rocks can be one of your best friends on a canoe-camping trip, once you remove them from beneath the tent. If you don't have an axe, you can use them to hammer in the tent pegs. Try setting fairly large rocks over the tent pegs and guy lines to add security to your rigging in case of high winds.

When renting gear from an outfitter, don't take things for granted. I left behind my trustworthy compass on which I've staked my life because the outfitter's fact sheet indicated that he packs a compass for you. He does, but it is one of those skimpy pin-on globes that don't really inspire the same feeling of security you'd get from an instrument you trust.

Also, when outfitting, be sure to check out the entire pack before the outfitter waves good-bye. One guide, recounting his pre-guiding days, told how he and his father "got out on the first day of a 12-day trip and found (the outfitter) had packed a 20-pound griddle with our stuff, a griddle we had absolutely no use for."

Your dish soap, cooking oil, shampoo or any other potentially sloppy liquids will pack more securely in plastic bottles with screw-on tops. Avoid those with the spouts that flip open—they'll either leak or get squeezed open.

A folding knife kept on a lanyard or in a holster on your belt is much easier to get at than one you leave in your pack or in a pocket. And don't underestimate the value of a handy knife.

A lightweight folding seat helps relieve back strain while you're paddling. It's also a welcome creature comfort if you are camping in an area where the only support you can get is lying down on the hard ground.

An 8-foot x 10-foot rip-stop nylon waterproof fly can have several uses. Most important, as a lean-to, it can protect your kitchen and firewood area so that in case of a rainstorm, you don't have to prepare food in the tent. You can use it as a basin for a bird bath. The fly can serve as a splash guard over your gear when you are under way.

Any insect can cause discomfort on a trip, especially ticks. No outdoorsperson can afford to ignore the precautions to take against Lyme disease, which ticks might carry. So, indelicate as this might sound, be sure to pack an effective spray insect repellent and give yourself a dose those times when you expose your skin to the elements—including those trips to the latrine.

12 An inexpensive but invaluable tool is a good, old-fashioned Zippo-type lighter. It performs better in the wind than a butane model.

In the wilderness, no one is worried about fashion statements. Some kind of a hat or cap should be part of your basic camp wardrobe. The bill or brim should be big enough to shade your eyes from the glare of the sun off the water and aluminum canoes. The head covering helps keep the bugs out of your hair. On hot days, you can dip the hat in the water and have a cool head as the water evaporates. You'll want something to tug on when you're sitting around the ol' campfire reliving the day's adventures.

The part-time or inexperienced paddler might get a bad case of the blisters. One way to avoid this is by wearing gloves. Work gloves or athletic gloves such as those used for racquetball



Tom Carney

or cross-country skiing let you grip and twist the paddle with minimal aggravation to your skin, especially the stretch between your thumb and forefinger.

15 If you wear shorts while paddling, be sure to protect the tops of your legs from sunburn.

Be sure to take at least two pairs of shoes, one for in camp and one that can get wet while you are in the canoe. That way, you won't attempt all kinds of gymnastics to avoid getting the shoes wet as you dance into or out of the canoe.

17 Kneepads or a foam pad placed in the bottom of the canoe can absorb a lot of the shock and stress from a long day's paddle.

Even in the middle of summer, a lightweight long-sleeved shirt is a useful item to pack. It can provide relief from the sun, protection from insects, and just a touch of warmth in the chill of morning.

19 Nylon gym shorts can serve you in many ways: as shorts, underwear, pajamas and swimsuits, for example. A few pairs of these shorts can take the place of about 10 individual items.

In camp, there are 101 uses for ½-inch nylon parachute cord: clothesline, extra guy lines for the tent, lines for your kitchen tarp. Also, tied to canoe thwarts, it can be used to lash down fishing rods, water bottles, and other items you want to keep handy yet secured.

You can tie the paddles to the thwarts when it's time to portage. A 50- or 100-foot length of such cord can prove to be mighty handy on your trip.

When beaching the canoe or stabilizing the craft near shore or rocks, dig in with the handle of the paddle, not the blade. In case of a break, you can always paddle if the handle is broken, but not if the blade is.

Beach a canoe sideways; don't just run it up on the shore. The hull will last longer.

Don't forget a waterproof, shockproof floating bag for those expensive items or valuables you are packing: Cameras, binoculars, wallets, car keys and notebooks.

24 If you have a choice, choose an island campsite. The breezes do a better job of keeping the flying insects at bay.

25 Simplify things by packing all food items separate from all other personal gear and camp supplies. That way, at dinner time you won't have to go digging through all your clothing or fishing tackle to find the pouch of beef stew you want to cook.

26 To minimize problems from pesky skunks, raccoons and chipmunks, use a tip from those who camp in bear country. Drop a rope over a tree branch and hang the food pack about 10 feet in the air.

27 If you enjoy fresh food, you can keep meat and perishables cool enough to prevent spoiling for the first two or three days of your trip. Store them in a separate denim or canvas stuff sack you've saturated with water. Dangle the smaller bag from your food pack, and the breeze should circulate enough air to keep the food cool.

Also, when you pack out eggshells, bacon grease or other garbage, hang your garbage similarly. You'll soon learn that a skunk can easily find a ground-stashed garbage bag; you don't want to learn about how a skunk sprays his stink when he feeds in a bag you've left on the ground near your tent.

28 When packing for the trip, be sure to plan menus that help you fill up at each meal. Additionally, pack enough rations to last at least a day longer than you plan to be out. In case the elements, medical emergencies or equipment failure keep you on the trip longer than you had planned, you can stave off one of the first anxieties to hit: hunger.

Be sure to have adequate, waterproof maps of the areas through which you will be canoeing, ones you're likely to keep handy, within reading distance as you paddle. Also, remember that there are no street signs on waterways.

30 A couple of pine boughs (from a fallen tree, not from standing timber) can make for an improvised broom when time comes to sweep the tent and move out.

The more experience you get, the more you will adapt and adopt these and other tips you create for yourself. Of course, no amount of advice nor number of suggestions can take the place of sound canoeing and camping skills, common sense and attention to safety.



Tom Carney



The KEYSTONE AQUATIC RESOURCE EDUCATION Program

by Kimberly Mumper

hen was the last time you saw students drawing a whalc on their school parking lot? Or perhaps pretending to be salmon swimming upstream over a fish ladder? Maybe you have seen a group of sixth graders trying to float a paper clip on water or you watched as your child searched a Pennsylvania map to find the headwaters of the Clarion River. What about the time you heard students debating how they would react to a proposed hydroclectric dam near their homes?

If you've run across kids doing any of these things, then you've had a great introduction to Pennsylvania's award-winning Keystone Aquatic Resource Education (KARE) Program. But you may well ask, "What is KARE?"

KARE is an environmental education program that focuses on the water resources of Pennsylvania—streams, rivers, lakes and wetlands, and their aquatic life forms. The activities mentioned above are just a few of the ways students learn about water, how it affects us, and how we affect it.

In 1988, the Fish Commission Bureau of Education and Information began working with the U.S. Fish and Wildlife Service to develop a master plan for an aquatic education program. Funds generated from taxes on fishing tackle and equipment under the Wallop-Breaux amendment to the Dingell-Johnson Act had become available for such programs. These matching funds allowed the Fish Commission first to plan and then implement its extensive aquatic resource education program.

Classroom setting

The KARE Program focuses on two educational areas, one of which is the formal or classroom setting. In the development of the formal program, science and environmental education teachers (K-12) around Pennsylvania were surveyed for what they saw to be the most

PA Fish Commission photo

Keystone Aquatic Resource Education

nceded aquatie education topics. The choices they were asked to rank included fishing and boating skills, ethics, uses of water, water pollution, aquatic ecology, endangered species and many others.

The results of this "needs assessment"

showed that teachers were less interested in teaching fishing or most fisheries-related topics. Instead, they wanted activities based on aquatic ecology, uses of water, water pollution, aquatic animals and environmental ethics. Lessons on Pennsylvania-specific water resources were in hot demand, as were materials suited to the junior high school level (grades 7-9).

The needs assessment taught the Fish Commission Education staff an important principle: You must know your audience before you go ahead with your show. The "show" that was then produced consisted of four sets of materials, one of which was produced just for Pennsylvania students. Water Resources in Pennsylvania, a set of informational and teaching activities, was produced as a direct response to the results of the needs assessment. It was designed for grades seven through nine, and it brought the general principles and processes of the aquatic world home to Pennsylvania. Some of the same teachers who responded to the needs assessment survey tested these new activities in their

The other materials used in the KARE Program arc the popular P.L.A.Y. (Pennsylvania League of Angling Youth) newsletters, Aquatic Project WILD—the aquatic supplement to Project WILD, and *Living in Water*, which was developed by the National Aquarium in Baltimore. With the

activity guides, teachers receive a package of Fish Commission publications on such timely subjects as acid precipitation, the greenhouse effect and wetlands protection. Each of these materials lends a different perspective to students as they investigate the world of water.

KARE workshops

The only way an educator can obtain this great set of materials is through participation in a KARE workshop. These are offered to elementary and secondary school teachers and other educators throughout the Commonwealth by a knowledgeable and experienced crew of KARE facilitators. By attending the workshops, participants receive the four activity guides and instruction in how to use them.

Teachers become acquainted with the activities by playing the part of students in such imaginative lessons as "Fashion a Fish," "Turtle Hurdles," "Marsh Munchers," "To Each Its Home," and "Water, Water Everywhere."

So far, over 500 people have "munched" their way through a 15-hour KARE workshop. Requests from teachers wanting to take a KARE workshop are received almost every day at the Harrisburg office.

Non-formal settings

The full KARE Program reaches beyond the classroom to the banks of lakes and streams. Through the non-formal education setting of recreation programs, the young and not-so-young will have the opportunity to learn fishing skills and also about the ecosystems that produce their catches. Fishing lessons accompany messages about water quality and food chains. This gives



PA Fish Commission photo



PA Fish Commussion photo

budding anglers a feeling for the humanresource connection and an appreciation of the fine resources that produce Pennsylvania's bountiful fisheries.

A six-week pilot program at Carnegie Lake in Pittsburgh is just now wrapping up. Over 100 kids a week have had a taste of the fun of fishing. Both the Education and Information, and Fisheries bureaus worked on this joint venture. A continuing needs assessment will supply the information required to develop accompanying materials for similar year-round programs, which will be running in several cities in Pennsylvania within the next two years.

Future activities

In the future, the KARE Program will foster the development of additional Pennsylvania-specific activities for primary and upper secondary grades, fishing skills sessions for handicapped students, and revamping the visitor centers at Fish Commission hatcheries.

The Keystone Aquatic Resource Education Program is well on its way to helping Pennsylvania's future writers, engineers, parents, doctors and community leaders become more aware of the precious and irreplaceable water resources their state possesses. Hopefully, this increased awareness will lead to responsible lifestyles and actions concerning their world's aquatic environment. If so, then the KARE Program will have truly succeeded.

KARE

Recognized Nationally

The Keystone Aquatic Resource Education Program (KARE) was chosen by the American League of Anglers and Boaters (ALAB) as the Outstanding Aquatic Resource Education Program in the country for 1990. The presentation of the award was made last June at the ALAB conference "Chartmaker 2000: The Future of the Wallop-Breaux Trust Fund," in Washington, DC.

Receiving the award on behalf of the Pennsylvania Fish Commission were Ed Miller, Commission Executive Director; Cheryl Riley, Director, Bureau of Education and Information; Steve Ulsh, Aquatic Resource Education Manager; Kimberly Mumper, Aquatic Resource Education Coordinator; and C. Blake Weirich, Commission Resource Planner and former Aquatic Resource Education Coordinator.

KARE is unique in its strong emphasis on aquatic ecology and resource conservation, and for responding to the needs of teachers.—*KM*

Making and Using a Secchi Disk

by Andy Cline

Everybody has a trick for determining water clarity. But only anglers who use a Secchi disk are getting truly accurate results that can help them catch more fish.

A Secchi disk is a simple device used by fisheries biologists and others concerned with measuring water turbidity. It is simply a metal disk that the biologist lowers into the water on a rope and then measures the depth at which the disk disappears. Knowing the accurate clarity or turbidity of the water you're fishing can help you select lures, keep off-color water from fooling you, or determine where fish are hiding.

In clear water, a disk reading of 24 inches or more, use lures with natural colors. In turbid water, a disk reading of 23 inches or less, use brightly colored lures.

Apparent water color is not a reliable test of clarity. In some waterways, black water appears as dense as coffee, but disk readings show that it is actually clear. When fishing for bass on bare structure such as rip-rap, the disk reading tells you the depth where fish are holding.

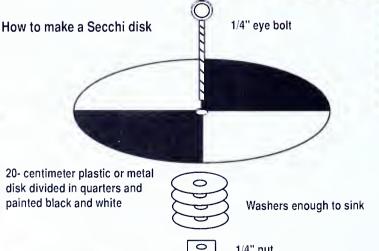
Bass, for one species, hold just below the Secchi disk level on bare structure. They use water turbidity as cover.

A Secchi disk is easy to make. Simply cut a 20-centimeter circle from a sheet of flex-



ible plastic. Drill a quarter-inch hole in the center. Divide the disk into quarters and paint them alternately black and white. Insert a quarter-inch x two-inch eye bolt and secure enough washers to sink the disk. Tie on a nylon rope and mark it in six-inch intervals with a permanent marker.

Always use the disk on the sunny side of the boat. Don't wear sunglasses when making a reading. Take a measurement when you can't tell the difference between the black or white portions of the disk. This is the Secchi disk level.



KidsPage!

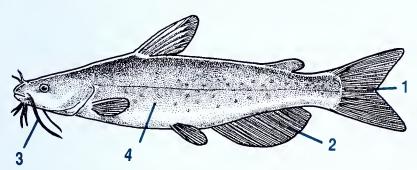
by Steve Ulsh

Catfish are one of the most common species found in Pennsylvania. They live in all the major rivers and warmwater streams, most lakes and some ponds. About the only places you won't find them are in the colder trout streams of the state.

They bite on just about anything from chicken liver and smelly shrimp to plugs, live minnows and spinners. Some trout anglers have been surprised by "old whiskers" sucking in a dry fly for a snack.

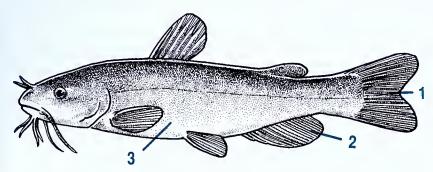
Some catfish, like the flathead, found only in the Allegheny River drainage, get quite large. The current state record is a 43-pound, 9-ounce specimen. Others, like the madtom and stonecat, are small enough to be used as bait.

Here are some drawings and identifying characteristics of Pennsylvania's catfish. You can use this information to identify your next catfish catch.



Channel catfish (no minimum size required to keep)

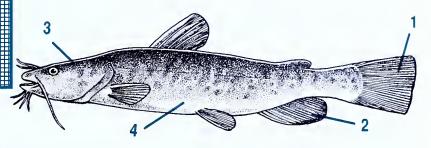
- 1. Tail is deeply forked.
- 2. Anal fin has more than 25 rays.
- 3. Chin barbels (whiskers) are black.
- 4. Bluish back (sometimes greenish) and sides, whitish below; small irregular spots.



White catfish (no minimum size required to keep)

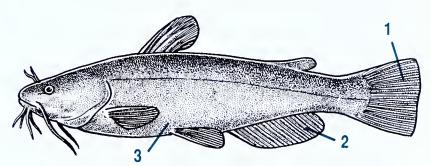
- 1. Tail is forked. Lobes are pointed.
- 2. Anal fin has 25 or fewer rays.
- 3. Bluish above to silvery below.

Some Information for You About Catfish



Flathead catfish (no minimum size required to keep)

- 1. Tail straight or rounded.
- 2. Anal fin has fewer than 16 rays.
- 3. Head is more flattened than other catfish.
- 4. Yellowish-brown above, pale gray below; blotchy sides.
- 5. Found only in Allegheny River drainage.



Bullhead (no minimum size required to keep)

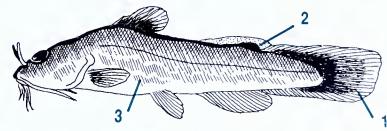
- 1. Tail straight or rounded.
- 2. Anal fin has more than 16 rays.
- 3. Yellow, brown and black are most common. Colors vary.
- 4. Does not grow more than 18 inches long.

Tail Characteristics



Flathead Bullhead

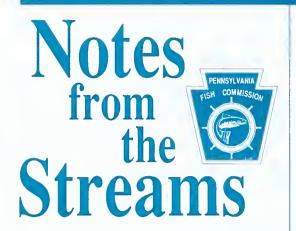




Stonecat and Madtom

- 1. Tail is rounded.
- 2. Adipose fin is connected to tail.
- 3. Yellowish-brown to gray and black, depending on species.
- 4. Stonecat, 6 to 8 inches. Madtom, 4 to 6 inches.
- 5. Stonecat found only in Ohio River drainage.

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Got the message

After a visit to a local elementary school where I had been invited to speak on fishing and boating, I received 47 thank you notes. One in particular caught my attention. It read, "Mr. Osborne, keep an eye on my Uncle Paul. He's a bad boy when it comes to fishing." It was signed, "Your friend, George."—DWCO John T. Osborne, Northeast Region

Multi-purpose area

When you think of Fish Commission boat access areas, you automatically imagine summer days and boats. This doesn't seem to be the case at the Mangon Cove Access on Lake Wallenpaupack. During the winter, our access transforms into a multipurpose area for all sorts of wintertime activities. Ice fishermen find easy access and plenty of parking, many people walk their dogs and joggers find an area to run without traffic. Children get a thrill riding their sleds down the small hills, travelers use the parking area to eat their lunches and use the restroom facilities, and crosscountry skiers exercise their legs when the snow conditions are favorable. Ice skaters find plenty of space to try their blades and many locals like just to sit in their cars in the parking lot to relax and read the daily paper. All these wintertime uses are at no charge. Sounds like a deal to me.—WCO William C. Carey, Pike County

A lifetime benefit

I've always been interested in water sports. Swimming, ice skating, fishing and boating were a major part of my childhood that has carried into my adult life.

Not long after I began college, I became aware of water safety and ice rescue classes. These were aspects of the water that I had

never really thought about before, so I decided to attend a course. Were my eyes opened! My seemingly simple, non-dangerous activities were much more dangerous than I had ever imagined them to be.

The first course I participated in was "Cold Water Survival and Ice Rescue." This was only a two-day course, but the information I received will benefit me for a lifetime. We were taught which ice is safe, how much weight certain types of ice can handle, how to dress properly for the temperature (types of clothing), personal safety and how to complete a safe rescue.

Another course I completed was "Boating and Water Safety Awareness." This course taught how to right a capsized canoe, what to do if capsized in a fast-moving current, conditions that render a personal flotation device unsafe and defensive postures that prolong survival in cold water.

The training I have received has already helped me save a potential drowning victim. Without this training, I do not think I would even have recognized the distress signals.

Take advantage of these types of training courses not only for your safety, but also for the safety of others. These courses are taught by skilled instructors and you can get information easily by contacting the Fish Commission.—Rachael Weiland, Bureau of Boating Intern, Butler County Community College

Patience?

They say that patience is a virtue, and anyone who's read the angling literature is reminded again and again that the sport of angling requires a great deal of patience. It was obvious on the opening day of trout season that some anglers are either not well-read or are well-read by don't practice what they've read. The comment received from a group of three anglers, as they were taking their rods apart, was that they had been fishing for 15 minutes, hadn't had a hit, and decided to call it a day!—*Bob Moase, Area 4 Fisheries Manager*

Poppa's got a brand new bag

While checking fishermen on a local lake last winter, I saw an old man standing on the ice, bent at the waist, holding a plastic bag open by the handles. He seemed to be staring into the bag. At first, I thought

he may be looking to see what was in the bag for lunch until a Brittany spaniel trotted up and dropped something into the bag. I followed the dog's movements with my binoculars. The dog ran up to one of the many panfish that the angler had caught, picked it up, carried it back to the bag, dropped it in and "fetched" another.

And all this time I though that Brittany spaniels were "bird" dogs!—WCO William C. Carey, Pike County

Safety first

"Way to go! You saved him!" I yelled to the smiling face as he pulled in his "victim" to safety. What, do you ask, could get me yelling like this? A boating safety awareness class that I teach for the Fish Commission Bureau of Boating.

This particular day I was in the Poconos teaching a group of Boy Scouts at summer camp. We began with a discussion of PFDs, followed by a chilling talk on hypothermia, and wrapped up with the pros of having natural flotation. When we completed our "lecture," we moved down to the water and started the real work.

First, we donned PFDs and jumped into the water so that we could get used to having one on while we did all the in-water work. We then got the canoes off the trailers and proceeded to "dump" them into the water and paddle back to shore with a boat full of water. We also practiced rescue techniques with the canoes, such as canoe-over-canoe rescue and getting back into a dry canoe from the water. Finally, we "rescued" one another by tossing throw bags to "victims" and pulling them to safety. We finished with a question-and-answer period of what we had just done.

We have a lot of fun doing these classes, but there is a serious side to them. One day, one of these skills might help you save somebody's life—including your own.

If you are interested in taking one of these courses, please contact Cheryl Kimerline at the Fish Commission, Bureau of Boating, P.O. Box 1673, Harrisburg, PA 17105-1673, or call (717) 657-4540.—Heidi H. Milbrand, Boating Safety Specialist

Three surprises

WCO John Bowser and I were working salmon patrol in Erie County. We were just pulling into Flower's Marina to check the area. As we crossed the bridge over Trout

ANGLERS CURRENTS

Run (nursery waters), we noticed two individuals shining a light in the water. John pulled the state vehicle behind Flower's home and instructed me to circle behind the two individuals to observe them.

I positioned myself between the suspects and a tree. I saw them net and kill a salmon. I walked up to the suspects (to their surprise), and explained that they were in violation of the Fish and Boat Code. From downstream a bright light shined into our eyes.

I yelled, "Is that you, John?" A voice in the dark replied, "Yes!"

I said, "Come on down; I have them!"
It was my turn to be surprised (believing the voice to be WCO John Bowser).
A figure of a man came closer. The silhouette of this person did not match WCO Bowser. I immediately asked the defendants if they had a friend named John and if this person was him. They replied, "Yes."

Now it was the suspect John's turn to be surprised. I explained that he, too, was in violation of the Fish and Boat Code.

I was surprised again as I escorted the three men back to our vehicle only to find that WCO Bowser was apprehending two other poachers!—DWCO Nick A. Clement, Erie County

"How ya' doin'?"

The comment often heard from anglers watching one of our electrofishing sessions is, "if only I could borrow your gear for a day." While collecting smallmouth bass in the North Branch of the Susquehanna River last summer, I found myself thinking the very same thing as an angler drifted past our electrofishing boat catching one smallmouth after another. The angler reported that he'd caught over 20 smallmouths. Fortunately, he didn't ask how we were doing. Our two hours of effort had produced only 12 bass.—Bob Moase, Area 4 Fisheries Manager

Tribute to a colleague

Last March, Pete Yeager, Assistant Regional Director of the Department of Environmental Resources Meadville Regional Office, suffered a fatal heart attack. Pete was a leader for the fight for clean water in the Meadville Region and was coordinating the water quality cleanup of Presque Isle Bay and serving as Pennsylvania's

representative on the International Joint Commission, which deals with issues affecting the Great Lakes. Pete's dedication to protecting the resource has benefited the anglers, boaters and citizens of the Commonwealth for many years. The Fish Commission would like to acknowledge Pete's accomplishments and pay tribute to the passing of a true conservationist.—John Arway, Chief, Division of Environmental Services

Thanks for stocking help

All of us at the Big Spring Fish Culture Station would like to express our appreciation to all the people within our stooking area who ventured out in good weather and bad weather to help us on the strucks and aid by carrying buckets and nets. And on those hot days, a special thank you to those who offered cold drinks! Because of all of you, our jobs were easier and certainly moree enjoyable.—Stocking employees at Big Spring Fish Culture Station, Newville, PA

Famous last words

I've heard some flimsy excuses and famous last words on the waterways. Here are three:

On licenses: "License? But I really wasn't fishing. I didn't catch anything!"

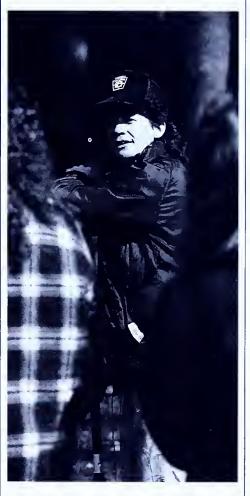
On boat registrations: "My registration is in my truck. I didn't put it on my boat because it clashes with my red-and-white boat. I already sent to Harrisburg to get a red sticker!"

On no-wake zones: "Of course I know what a no-wake zone is! But it only applies to leaving the dock, not coming in, right?"—DWCO Fran Adamson, southern Montgomery County

Backtalk

Argue with the Commission. Applaud us. Advise us. If you have a question on fishing or boating, ask us. The Fish Commission invites readers to write letters to the editor for publication in this space. Send correspondence to: The Editor, *Pennsylvania Angler*, P. O. Box 1673, Harrisburg, PA 17105-1673. Letters are edited for clarity and space considerations.

Kimerline Wins Lawton Award



Boating Safety Education Specialist Cheryl Kimerline won the 14th annual Captain Fred E. Lawton Boating Safety Award, which honors a media professional making the most significant contribution to boating safety. Kimerline received this national recognition for her articles in Pennsylvania Angler and Boat Pennsylvania, for her "Kids Page" contributions in the magazines, for newsletters and press releases she's written, and for an article on boating and water safety awareness that appeared in a professional educational journal. The award included a \$1,000 honorarium, a pair of Waterford crystal captain's decanters and a commemorative certificate.

ANGLERS CURRENTS

Access Guide

The Chesapeake Bay and Susquehanna River Public Access Guide is a must for those who explore the river and bay. The 72-page guide was produced cooperatively by Pennsylvania, Virginia, Maryland and the District of Columbia. It contains the most

up-to-date information on public access sites in the Chesapeake Bay, its tidal tributaries and the Susquehanna River.

Colorful maps display information on over 650 public access points. Facilities at each site are listed for boating, swimming, hiking, camping, fishing, picnicking, nature study and more.

The coverage area is divided into color-coded sections, which

makes finding areas and sites easy. The sections are the Susquehanna River, upper Chesapeake Bay, and lower Chesapeake Bay.

The guide is available for \$5, including shipping and handling, from: Pennsylvania Fish Commission, Publications Section, P.O. Box 1673, Harrisburg, PA 17105-1673. Please make your check or money order payable to Pennsylvania Fish Commission.



Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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Angler's Notebook by C. Boyd Pfeiffer

If you're using heavy line, make sure that all your lures have a split ring or snap. Otherwise the heavy line snugged to the lure at the knot tends to reduce the built-in lure action.

For better hooking, use pliers to open the gap slightly on hooks. This ploy is best for worm hooks, flies, poppers, buzzbaits, spinnerbaits and jig hooks.

An easy way to fish flies in weeds is to use keel hooks. The wing of the fly is tied to cover the hook point and protect it until a strike.

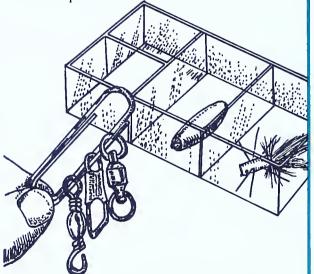
Never just crank a lure in. Vary the retrieve to make the lure dart and jerk, pause and swim. Make it look like an injured creature—something that any predatory gamefish would attack.

Loosen the drag on all reels after fishing for the day. If you don't, the "soft" fiber washers in the drag will deform and may stick to the hard metal washers, making the drag jerky and unreliable the next time out.

Check the sharpness of your hooks by dragging the points lightly across your thumbnail. If the hooks are sharp, they will dig in without pressure. If they don't, sharpen them.

Got enough rods and reels? Ask for binoculars this Christmas. They are ideal for triangulating points to return to a hotspot, for checking the catches of other anglers, to search for the launch ramp, to check out wildlife, and to check buoy numbers.

A basic rule for bass fishing is to use bright lures and flash-finish spoons and spinner blades in clear water, and dark lures and copper, brass or painted blades in stained or cloudy water. If you're fishing in the rain, keep your tackle box closed except when absolutely necessary to get a new lure. Even after fishing, leave the box open at home for a day or two to dry the contents. Closing the box with a high degree of moisture or wet lures can rust all your hooks and metal parts in the box.



Use paper clips for easy storage of snaps, swivels and similar terminal tackle. They are easy to add and remove as required.

You can often have the best fishing of the day this month on heavily fished waterways from first light until sunrise. At this time the fish have been left alone for the longest period, and they might hit your lure or bait readily if you present it as naturally as you can.

In the market for a bow-mount electric motor? Foot-controlled models are popular with owners of big bass boats, but boats with small casting platforms don't provide as much room. Consider one of the new and less expensive hand-controlled bow motors instead.

illustration- Rose Boegle

On the Water

with Dave Wolf

The gate is locked and my friend crawls from his jeep to unlock it. I look around and the trees are littered with "No Trespassing" signs. Suddenly the feeling that I do not belong sweeps over me. These are private waters—waters reserved for those with bank accounts larger than mine. Many have worked long, hard hours to pay the tariff, a stiff fee that is worth the price—at least to them.

In another sense I feel privileged. I am about to fish the country club of trout waters, and with the stiff fee come anglers who appreciate the sport and the stream they fish. I see fine bamboo and graphite rods pulled from gleaming protective cases. I see gentlemen dressed for the sport, not unlike the waters of England that I have read about so often.

My host tells me that the waters are heavily stocked. He also tells me of the fee the members pay—something I cannot afford. No matter, there is a waiting list that opens and closes only when an unfortunate member passes away. I feel a bit out of place because I'm used to blue jeans and worn waders, although I admit my equipment is on par with those who surround me.

I am told that a hatch will transpire—a Trico hatch—and on cue, balls of the miniature mayflies gather overhead. Trout slip and swirl in the slow-moving waters and my pulse quickens. As always at times like these, I cast quickly and strike too soon. My office nerves are still with me and it takes time to settle in. I do not miss the second fish, however, nor the third or fourth. The trout are as excited as I and then I spot a large swirl beneath the limbs of a streamside tree. The limbs hang over and nearly drag on the surface film and trout rise within the protection they afford. I cast downstream and snake some line through the guides as the tiny imitation floats perfectly—fly first with fine 8X leader trailing.

The trout rises confidently and I bring it to the bank and twist the fly loose. It's a good trout, one of the finest I have taken this year. The hatch continues and the trout rise freely for the next hour and then it is over. My host and I sit at streamside and discuss the morning's fishing. He is one of the finest gentlemen I have met and a leader for years in the conservation of trout. He has devoted a lifetime to improving trout waters for the public's use, and yet he spends the majority of his time fishing private water.

There is something hallowed about private waters; many are steeped in tradition and in the clubhouse of one are photos of members holding trout that would make any fisherman happy. Fishing on such waters is tremendous if you are interested in large fish. Many fish are pellet-fed daily. I recall fishing one such area on a sunny afternoon when five casts yielded five trout over 20 inches. I was fishing a spun deer hair beetle during the afternoon hours. It is a favorite pattern of mine when I think that terrestrials might interest trout. It wasn't until the fifth fish that I began to believe that they were taking the beetle thinking that it was a food pellet.

Private waters, the members claim, allow angling over large trout in good numbers. Many clubs stock weekly from April through September, making sure that an abundant number of fish is avail-

Private Waters



Russ Getti;

able to their members at any given time. Although private waters take stream sections away from the general angling public, members claim that upstream and downstream areas benefit from their stockings.

On one hand, I look upon private waters the way I do country clubs. They are well-maintained, neat as a pin, and offer something the average public cannot afford or are not willing to fund. Most clubs charge \$500 to \$1,000 for an annual membership.

On the other hand, I feel bad that the general angling public loses such waters for their own angling pleasure. The cost of maintaining this type of fishing would be prohibit to to, the Fish Commission and it would be difficult to limit the number of rods on a given stretch of water per day. Then growth may be sturred by the general angling public's opinion that tishing is a right that should bear a very small price tag.





Straight Talk

Skiing and Susquehanna Shad



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

Nearly 20 years ago, a group of Juniata County residents began development of a new ski area next to the Juniata River, two miles from the tiny village of VanDyke. At that time, I decided to buy a small house in VanDyke that could serve as a recreation home for the Miller family close to the new ski area and the excellent fishing and boating on the Juniata River.

Although the ski area development did not occur until just recently, we used the building on numerous holidays and weekends, fishing and boating on the river, hiking in the adjacent wilderness forest area and watching Conrail and Amtrak trains traveling the "main line."

While hiking in the nearby woods one warm summer day with my son, Scott, and daughter, Nina, I discovered a small dam on one of the spring-fed mountain streams originating on the north side of Tuscarora Mountain. The dam had been constructed in a bygone era to collect and pipe water to the now-defunct VanDyke Brick Works, located at the base of the mountain near the river. This discovery kindled the idea of building an American shad hatchery. I had a strong belief that modern hatchery methods could turn previously unsuccessful egg collecting and stocking efforts into a successful method of restoring American shad to the Susquehanna River system.

I immediately approached the executive director with my plan to use the remaining brick works building foundations and water supply dam and waterlines to build a small shad hatchery. After many months of discussion, I was given permission to proceed early in 1976.

The property was owned by the Pennsylvania Department of Environmental Resources Bureau of Forestry, so we were able to lease the necessary lands quickly, and within three months, our engineering and construction people, using old form lumber, used pipe fittings, old fish tanks and whatever else we could buy quickly or scrounge, put together the only existing American shad hatchery in the world.

After the normal startup problems were solved, the station began a long string of successful annual hatching and stocking cycles. In the 15 years the station has operated, more than 108 million fry and one million fingerling shad have been hatched and released from the facility. Never has the success of this effort been more evident than during the past three months. Nearly 16,000 returning adult shad were trapped at Conowingo Dam and trucked to river release sites above the four lower dams. This number is more than double the record number of fish trapped in 1989, when more than 80 percent of the returning fish were identified as fish hatched and released from VanDyke.

VanDyke has been the key to the restoration of American shad in the Susquehanna River and the major reason why the Philadelphia Electric Company recently began construction of a \$12.5 million fish lift to be placed in service in 1991. Operation will ensure continued natural migration of all anadromous and diadromous fish to Pennsylvania waters of the Susquehanna. Within the next few months, the Fish Commission is expecting firm construction schedules from the owners of Holtwood, Safe Harbor and York Haven dams.

Although I was never able to use the "cabin" at VanDyke for family skiing, I did enjoy many hours of family fun, and its role in helping to create the VanDyke facility is now history. The cabin did serve as a "visitors center" and quarters for staff during the early years of VanDyke operations, thereby further contributing to the success of this venture.

Much credit for VanDyke's success goes to Commission engineering, construction, fish culturists and researchers who grabbed this idea and made it work. Their dedicated efforts will forever be recognized as a major factor in this historic restoration project. It is a fishery success story with few equals.

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Smallmouth Bass Regulations: Where Should We Go from Here? by Rickalon L. Hoopes

Results of this survey will be used along with other information to help create future smallmouth bass regulations.

On the Water With Dave Wolf

The covers

The largemouth bass on this month's front cover was photographed by Wally Eberhart. Mark Dauberman photographed an angler on the back cover trying his luck in Cumberland County's Big Spring Creek. This month, focus on fall fishing. To catch more trout, for instance, it pays to know what trout eat. Along these lines, please turn to pages 4, 12 and 22. Warmwater angling enthusiasts can find practical ideas on pages 7 and 18. If you're interested in smallmouth bass fishing and how the Commission manages the Commonwealth's smallmouth bass resource, please see page 24, and be sure to let the Commission know your preferences for smallmouth bass management by completing the survey at the end of the article and sending it to the Commission.

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Learning About Trout Prey

by Tom Fegely

During my school teaching days, one of the most popular activities with youngsters from kindergarten through high school was a stream survey. Outfitted with plastic cups and porcelain pans, the students waded in the shallows of the Little Lehigh and gathered aquatic nymphs and larvae that they located beneath rocks.

Of course, half the fun was getting their feet (and one another) wet. But the youngsters real interest was obvious as they placed their tiny finds beneath stereoscopes and marveled at the enlarged views of the creatures they never knew existed.

For budding fly fishermen, identifying the aquatic insects on which their quarries feed is a prerequisite to this consuming sport. Seeing the creatures first-hand, both in their immature and adult stages, enhances the chore of tying and fishing fly patterns

designed to fool Mother Nature. And there's no better time than now to don sneakers and shorts and sample the variety of larval and nymphal forms beneath the surface of a favored stream.

Caddises

One of the most common underwater creatures in Pennsylvania is the green worm-like larva of the caddis fly. Some 400 species of caddis flies exist in North America and many of them dwell in Pennsylvania. Like moths

body change from egg to adult known as "metamorphosis."

1 like to refer to two obviously different varieties of caddises as "log cabin" and

and butterflies, they go through a complete

I like to refer to two obviously different varieties of caddises as "log cabin" and "water nct" caddis flies. These insects have an unusual way of protecting themselves during a time in their lives when their soft bodies are relished by hungry fish. They build houses around themselves.

Generally, the caddisworm that lives in calm pools or ponds fashions a "mobile home" around its body. When it's time to travel it puts the foreparts of its body out the front entrance and pulls along its house, which is composed of small sticks and plants.

Other caddises living in slow waters, even ponds, stick their rears into tubular stems and use them for camouflage and some protection.

The caddisworms that dwell in fast-flowing water build homes of tiny pebbles, sticks and grains of sand, and anchor them onto rocks. They dwell inside the houses and fashion fine-mesh nets not too far from the front door. As water flows through the net, the caddisworm "trappers" have constant delivery of tiny foodstuffs right to the porch step. They need travel only a few centimeters to gather food from the snare, thereby reducing the chances of being gobbled themselves by hungry trout.

I've frequently cleaned trout and discovered small pebbles in their stomach contents—probably from having eaten caddisworms.

Stoneflies

Another insect familiar to fly fishermen but not to



photos by Tom Fegely

This adult mayfly is one of about 100 known species in the United States. These delicatewinged creatures live underwater from six weeks to three years. Aerial and terrestrial adults then live only a day or two, sometimes shorter. All mayflies belong to the family Ephemeridae. Their existence is indeed ephemeral.



most others is the stonefly. The stonefly has no worm-like larval stage but spends its early life as a nymph. Nymphs elosely resemble the adults but do not have wings. Both eaddis flies and stoneflies eventually tum into flying insects that leave their watery homes to live in the air and on the shrubbery surrounding streams and ponds. During their emergence, trout and other gamefish actively feed on them and fishing is best when a hatch occurs.

One winter I received a note and a small vial with four insects inside from a man who was a member of a county hunting and fishing club near my home. He had found massive numbers of the insects crawling

on the snow along a stream.

I identified the ereatures as stoneflies. Though I'm not enough of an entomologist to have identified the exact species (there are nearly 3,000 different types on the continent), I do know that there is one species (known scientifically as *Capnia pygmaea*) that has the peculiar trait of emerging from its aquatic nursery before the snow has melted from the banks. At times, they are so plentiful that they cover rocks and posts near the water in black swarms. I presume that the insects sent to me were this, or a closely related, species.

While in their nymphal stage, stoneflies are accomplished predators, capturing and

Identifying aquatic nymphs and larvae trout food—on stream bottoms and beneath rocks is a delight for budding anglers.

devouring other small forms of animal life. As adults, however, their prime function is to reproduce, and many species eat nothing at all in their winged stage.

Stoneflies, unlike caddis flies, are confined mostly to flowing streams where they lurk beneath rocks. They each possess a pair of long tails and equally long antennae.

Mayflies

A third common insect that a curious

This stonefly nymph (right) is one of 3,000 North American species. A net-building caddisworm (below left) is one of 400 North American species

stream searcher is sure to find is the mayfly nymph. Some 100 known species of this delicate-winged creature are present in the U.S. Each has the peculiar trait of living underwater for six weeks to three years, and then existing as an acrial and terrestrial adult for only a day or two, sometimes less. They mate in flight, then drop or lay their eggs in water and die. They belong to the family

Ephcmeridae, and they are truly insects of an ephemeral existence.

Mayfly nymphs can be readily identified by three (sometimes only two) long, delicate tails. Occasionally, when they emcrgc from a stream, the tiny flies fill the air as if a midsummer snowstorm were under way.

The hellgrammite

Many other insects also use water in the initial or the entire period of their lives. One that's always intrigued me is the hellgrammite—both in its ugly nymphal stage and as a harmless but fierce-looking adult.

The hellgrammite is a noted smallmouth bass bait. More than a dozen years ago, while shad fishing from shore on the upper Delaware near the Lackawaxen River, I took a mid-day break and scoured the shoreline. By turning over rocks in the shallows I was able to capture about 10 of them-not bad for an hour's hunt.

Later in the afternoon these live baits with their powerful pincers (which were removed), hooked under their collars, accounted for a limit of smallmouth bass one a hefty three-pounder.

In most places hellgrammites are diffi-

cult to find-at least in sufficient numbers to take a day-long bass trip. But they're hardy and often more than one fish can be taken on a single bait.

The adult form of the hellgrammite, known as the dobson fly, might make an appearance on your screen door during the summer months. One was recently

forwarded for identification by an Easton resident who lives near the Lehigh River. The flies measure over four inches from



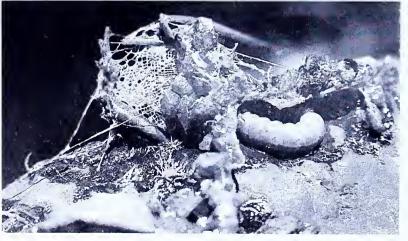
This alderfly is a better runner than a flyer. Adults remain close to their larval habitats.

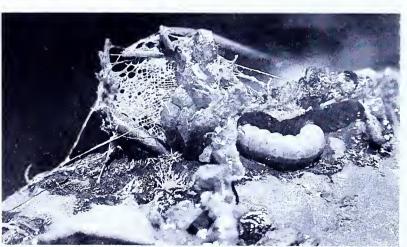
the tips of their antennae to the ends of their wings. They are ferocious-looking but harmless, and are attracted to street and porch lights.

Of course, there's a variety of other underwater insects including dragonflies, damselflies, midges, cranc flies and beetles that the wet-footed explorer will discover.

You don't have to be an entomologist to learn about the insect prey that trout feed on. A pan, an aquarium fishnet and a magnifying glass are all that's needed to do your own stream search.

And don't forget to take a young angler with you.





BIG-RIVER REDEYES

by Bruce Ingram

Most articles penned about rock bass say that this panfish is a "backup gamefish," that it's one that can be caught when smallmouth bass aren't hitting. If mossybacks are "turned off" by cold fronts, the stories go, the "old reliable rock bass can save the day."

That saving-the-day business is all well and good, I suppose, but it underestimates the sporting potential of rock bass, also known as redeyes, goggle-eyes, rock sunfish, and just plain rocks. In fact, *Ambloplites rupestris* is a superlative species to pursue because of its distinctive virtues. And because by this advanced stage of the fishing season Pennsylvania's major rivers such as the Susquehanna and Juniata are typically lower and clearer, now is a great time not only to catch plenty of redeyes, but also to fool big ones.

Reading a river

The key to this angling success is knowing how to read a big river. As summer blends into autumn, the state's streams are usually lower and clearer, thus enabling you to visualize better where redeyes congregate. The knowledge gained now can help you throughout the angling year.

Without a doubt, the number-one holding area for rock bass is an eddy. These areas of reversing currents (that is, where a current of water runs contrary to the main current) create a backwater. Forage species such as hellgrammites, minnows, crayfish and various aquatic insects are often swept into eddies and become trapped there. Rock bass aren't rocket scientists, but they are instinctively aware that eddies mean food and lots of it.



The main requirement in fishing an eddy is mancuvering your canoe, johnboat or other craft out of the main river flow and becoming "trapped" in the eddy like those forage species. Once inside a backwater, your boat is very easy to hold in place and the water can be worked thoroughly. I once caught 13 goggle-eyes in 17 casts in an eddy, attesting to the fishholding ability of this type of area.

Current breaks

Almost as good as an eddy is a current break, specifically those behind boulders. Logjams, brush piles and stumps can also create slackwater areas behind them, but rock bass—true to their name—seem to prefer those created by large stones. It is best to fancast eddies. Because the fish can often be found throughout them, but redeyes hold in very specific areas in current breaks.

Cast upstream and beyond midstream boulders and allow your lure or bait to be swept behind these obstructions. Strikes most often

occur when the offering comes around a side of the rock, directly behind it, or several feet below the boulder where the relatively slow water borders or meets the river's main flow.

Ledges

Another super sanctuary for rock bass, especially jumbo-sized ones, is a deep-water ledge. This locale can be harder to find than an eddy or a current break, which is very visible, but that search can be well worth the effort. Many anglers become confused when they try to work areas such as ledges in major river systems. After all, how do you fish a place like this when "it all looks so good and there's so much of it"?

The solution is to divide the river into sections. Just as you fish a small trout stream by probing each rock and log, you can do the same in a large river. Merely visualize each little section of a river as a small stream within itself, and then concentrate your efforts there.

Wading can very easily accomplish this by forcing you to fish slower and cover less ground. Canoeists can do so by dropping anchor in one spot and staying there for 30 minutes or more. Remember, the smaller fish are the most aggressive, are in shallower water, and strike your lures the quickest. Put down roots for a while—especially around ledges that are in six or more feet of water—and concentrate on presenting your artificials deeper. The result is often rock bass that stretch 10 or more inches in length and weigh a pound or more.



Rock bass and smallmouths, like this one, often live in the same places, so be ready for smallies when you seek redeyes.

Lures, baits

Unlike many members of the sunfish family, goggle-eyes have large mouths and there is no need to use ultralight lures for them. Indeed, 2 1/2-inch to 3 1/2-inch floating-diving minnow plugs and crayfish crankbaits of the same size are ideal for this gamcfish.

1 like to work plugs and crankbaits in a stop-and-go fashion. When these imitations pause is the time when most strikes occur. Rock bass often pursue lures for considerable distances and any variation in the retrieve can cause them to attack a lure savagely.

Other good lures are in-line spinners, spoons and grubs in the two-inch to three-inch size. The latter particularly is an outstanding lure for redeyes and may be the absolute best for oversized rocks. Like many anglers, I was slow in seeing the virtues of this plastic bait.

Many crankbaits are embossed with lifelike images of various aquatic beasties, but grubs look

like a piece of colored plastic with a tail—indeed, which is what they are. Their action is subtle especially when compared to that of wildly vibrating crankbaits and wide-wobbling surface plugs.

Actually, the understated nature of grubs may be the secret to their success. I prefer ones that have upturned curly tails, staying away from those models that sport endless series of "undulations" to them. My favorite colors are brown, orange, pumpkin and purple. Stick with the basic colors and you should be all right.

Another virtue of grubs is that they can be worked at any depth or at any speed. For larger redeyes, allow this imitation to settle to the bottom and then begin a slow, methodical retrieve. If hits aren't occurring, hop the lure along the bottom in the manner of a fleeing crayfish. Expect to lose plenty of grubs and catch plenty of fish.

Live baits

Live baits, of course, are terrific choices for goggle-eyes, and many days they outperform lurcs. Hellgrammites, crayfish, minnows and salamanders all take their share of fish. The key to success with live bait is to use the correct sizes of hooks and sinkers. Jab a 1/0 hook into a minnow and by the time you cast the little critter, all you are doing is deep-sixing it. The same is true when you affix too large a sinker to your line; the minnow plummets to the bottom and quickly expires there.



can be used for both gamefish. Poppers, streamers, crayfish, hoppers and crickets catch their share of fish. Hoppers and crickets are especially productive late in the summer and early in the fall.

Try small, light-wire hooks with a size 8 an all-around good bet, and put on only enough weight to keep your bait down and moving slowly along with the current. I hook hellgrammites through the collars, crayfish through the tails, and minnows and salamanders through the lips. Change bait frequently and you're set!

Fly fishing is a great way to enjoy jousting with goggle-eyes, and should not be overlooked. Any long rod designed for river bronzebacks suffices for redeyes, and many of the same patterns

Bruce Ingram

There's no need to use only ultralight lures for rock bass. Crankbaits of 2 1/2 to 3 1/2 inches work just as well.

Tackle tips

When fishing exclusively for redeyes, the standard wisdom is that light spinning or ultralight gear should be used and that twoto four-pound test should be spooled on. I disagree, especially

when going after big river redeyes. A rock bass is an accomplished gamester in its own right, and it doesn't need undersized tackle to put up a good skirmish.

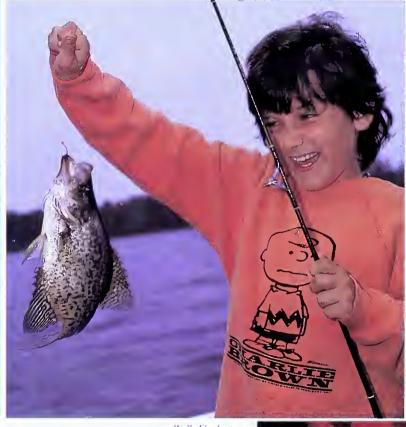
I opt for a medium-weight spinning outfit with eight-pound-test line in clear or green. This outfit lets me extract redeyes from the rocky and branchstrewn habitat that they sometimes burrow in. Plus, the eight-pound-test line makes retrieving snagged lures and baits much easier. Once you snag a grub in a mid-river rockpile, and all you have is gossamer mono to assist you in getting it out, that lure is gone forever. Green or clear line is best because fish are less likely to be spooked by it, considering the clear water conditions that are prevalent now.

This outfit is also good for another reason if the rock bass aren't biting you can always use the medium-weight setup for smallmouth bass!

With the end of summer and the low water that usually accompanies that ending, Pennsylvania's rivers become easy to read. Take time to recognize eddies and current breaks and to locate ledges. The big-river redeves are there waiting for you.

LOW-Cost Baits

by Gary Gresh



Wally Eberhart

Bait shop closed? Out of your favorite bait? No bait shop in your area? Take heart. There arc many other bait sources, some as close as your kitchen or backyard.

The average supermarket, for instance, contains enough bait to make any trout, catfish or carp fisherman happy. If the fish don't eat it, at least you can. Every angler should throw a couple of cans of whole kernel corn into the cart. This is great bait for trout, earp and suckers. I've also taken panfish on corn. Rig one or more kernels on your hook. For carp, the more corn the

better. You can also use it to chum with when carp fishing. Kept in a closed container, corn keeps well in the refrigerator.

Another effective trout bait is tiny marshmallows. They come in different colors and flavors and some colors may outproduce others. One bag supplies dozens of baits, provided the kids don't eat them all first.

Wally Eberhart

Collecting your own bait and sampling the enormous variety of supermarket baits can help you score when you're out of bait or when the tackle shop is closed.

Don't forget the cheese. This is another top trout bait. Velveeta cheese is the most commonly used. Cut it into tiny squares and place one on the hook or roll it in a tiny ball around the hook. A little cotton helps it stay on the hook. Garlic cheese is an increasingly popular trout bait. All cheeses have a long shelf life in the fridge.

Cooked elbow macaroni threaded on a hook also takes trout. Pieces of hot dogs sometimes do the trick on trout and catfish. Bacon is also worth trying for trout. Use small, uncooked pieces.

Other breakfast foods do double duty as carp bait. Take a piece of a large shredded wheat biscuit, clench it in your hand, and dip it into water for a few seconds. Knead it into a sticky lump and mold it around your hook. You can also do the same thing with oatmeal, but adding a little sugar makes it much more effective.

Catfishermen can load up the cart. Liver, especially chicken but also pork and beef, makes great catfish bait. Chicken entrails, if you can get them from a butcher, are good baits, too.

Gourmet catfishermen shouldn't pass by the spice rack. Pick up a bottle of vanilla extract and a container of anise seed. Mix two tablespoons of anise seed and two tablespoons of vanilla extract in a cup of water and then pour it in a pan and let it simmer for a few minutes. Allow the mixture to cool and then place it in a sealed plastic bag with your cut bait. Let it marinate overnight in your refrigerator before using or freezing it.

Doughballs

Some carp fishermen have special doughball recipes. Common doughball ingredients include cornmeal, breakfast cereals, sugar, molasses and gelatin, flour, honey and cotton.

Here's one terrific recipe: Bring a pint of water to boil. While the water is heating, mix together two cups of corn meal and one cup of flour. When the water begins to boil, turn the heat to low. Add half a package of flavored gelatin and stir well. Add two tablespoons of sugar and a tablespoon of vanilla to the pan. Add the dry mix carefully using a large soup spoon. Add enough dry mix to cover the surface of the water. When a bubble of water seeps through, cover the bubble with more dry mix. Continue covering the bubbles with dry mix until all the cornmeal/flour mix has been added. Then stir the dough for about 30 seconds. Remove the pan from the heat and empty the contents onto a piece of aluminum foil. As soon as the mixture is cool enough, knead it and roll it into a ball. Wrap the dough in foil so that no air gets in. It can be stored in the refrigerator for up to a week.

Live bait

When it comes to live bait, a resourceful fisherman can usually scrounge some up somewhere. Digging in the garden or compost heap or overturning stones in search of worms is par for the course. Diehards check the sidewalk after a heavy rain for nightcrawlers. Minnows may be caught in nets, seines and traps. Portable air pumps help keep them alive.

Crawfish can be caught by lifting rocks in riffles and letting the current wash them into a net. Crawfish may also be caught in modified minnow traps. Enlarge the openings so that they are wide enough for the crawdads to enter. Bait with meat. They may also be caught in plastic milk jugs buried in the creek bottom. Cut the top off so the jug is completely open at the top. Place it in a hole so the top of the jug is flush with the creek bottom. Bait the jugs. Crawfish enter the jug, go to the bottom and have difficulty escaping. Use several jugs in different sections of the creek so you don't fish it out.

Crayfish are great bait for bass, panfish and catfish. For panfish, use the tail and claw meat. For bass, use crayfish whole and alive, hooked through the tail. Dead crayfish threaded on a hook are good bait for catfish and can be fished as an artificial lure for bass.

Live bait for musky fishing is quite expensive, so many musky and northern pike fishermen catch their own small suckers, perch and chubs for bait.

Leeches live in litter on the bottom in still water. They should be hooked like worms and used for bass and catfish. They are very hardy.

Many insects make good baits. Softbodied insects such as grubs can be threaded on a hook like worms.

Crickets can be attracted to baits like bread and are easy to raise in large cans with damp sand on the bottom. Feed them mash or commeal. Both are hard to keep on the hook. Grasshoppers are tougher baits and they are easier to keep alive.

Hellgrammites, the pincer-jawed larvae of the dobson fly, live under rocks in swift water. They are deadly on smallmouth bass. Hook them through the tail or collar.

Bee and wasp larvae, catalpa worms, mealworms and nymphs of water insects are all productive baits for trout, bass and panfish. Caddis larvae can either be removed from the case or have the case lightly crushed.

Frogs and salamanders of two to three inches are good live baits for bass and other gamefish. Hook them through the eyes or leg muscles, leaving them free to swim. Dead ones are good catfish bait. Tadpoles should be hooked through their thick tails. Dead ones can be strung on a hook. Salamanders are best when hooked under the backbone in front of the tail. Keep them cool and moist.

Mealworms

Mealworms are excellent baits for both panfish and trout and can be raised easily at home. All you need are some mason jars, uncooked oatmeal, stockings and some live mealworms to start out. If the bait shop doesn't handle them, try the local pet shop.

Clean and dry the mason jars and fill them halfway with the oats. Add some mealworms to each jar and cover the mouth with the stocking to allow air to circulate and to prevent escapes. For food, place two pieces of potato peel in each jar. The mealworms do not eat the oats. Place the jars in a cool, dark place such as a cellar. Replace the potato peels every two weeks.

Within a few weeks, the worms will pupate and emerge as small, black beetles that will mate and lay hundreds of eggs in the oat flakes. When the beetles die, you'll see hundreds of small worms creeping around the oats that will grow into mealworms in a few weeks.

Mealworms grow faster and enter the beetle stage faster in warm temperatures than in cold. This allows you to refrigerate some while letting the others mature faster, delaying the beetle stage for some so you have a constant supply of mealworms.

Excessive heat will kill them. Fungus destroys them, too, if the jars get too moist. To avoid this, limit the number of potato peels per jar and use the stocking as a cover to allow air to circulate freely. Throw away any contaminated jars so the fungus doesn't spread to the others.

Between the local supermarket, streams and the resident insect population, there's a vast array of fresh bait available for almost any fishing trip. With a little effort and ingenuity, you can have your cake—er, bait—and in some cases, eat it, too.

A Foam Flying Ant



by Chauncy K. Lively photos by the author

Few terrestrial insects can match the broad, nearly universal distribution ants enjoy. They are the most abundant insects and their presence on or in the water provides a food source, even though limited, to many species of fish. As with all landborne insects, their entry into streams and lakes is random and accidental.

The mating flights of winged ants may be so vast that they look like millions of the insects. Mating takes place in the air, after which the males fall dying. The females, or queens, return to the ground, rid themselves of their wings and either start new colonies or join existing ones. The queens need mate only once to be able to continue to lay fertile eggs for the rest of their lives, which may last 15 years or more.

The dying males fall to whatever surface happens to be in the way—land or water. When they alight on water they often do so in numbers that rival the heaviest mayfly spinner falls, providing great opportunities for both fish and fly fishermen. Winged ants may be black or reddish-brown and may be as large as size 12 or as small as 22. However, on a given day, the mating males will likely be a single uniform size and color.

It seems impossible to predict accurately when mating flights will occur, at least to the degree that mayfly hatches are predictable. I've occasionally encountered tiny flying ants mainly during hot days in July and August, and I've run across flights of the larger ants in September. The safest bet is to carry a full selection of ant patterns. Then you'll be prepared for any surprises.

Every fly fisherman knows how fussy trout can be when a single insect species is on the water in great numbers. They



Clamp a regular-shank dry fly hook in the vise. Tie in brown prewaxed 6/0 thread behind the eye and wind it back to the bend. Then wind it forward to the mid-shank. Cut a strip of white evasote 1/16-inch thick from a 1/18-inch sheet. Tint the foam strip reddish-brown with a permanent marking pen. Position the strip over the rear half of the hook with the long end extending behind the bend. Tie in the strip at mid-shank with spaced turns to the bend. Then wind it forward to the mid-shank.



Pull the foam strip up over the top of the shank and tie it down at the mid-shank, forming a bulged abdomen. Then wind it forward in firm, close wraps around the foam and shank to form a narrow waist. Trim the foam at the fore end of the waist and put the remainder aside.



3 (Top view) For legs, cut four brown deer or elk hairs from the hide, and bunch the hairs together. Lay the bunch crossways over the shank at the rear of the waist, and bind it to the waist with criss-cross winds. Then work the thread between the hairs to spread the legs.

become locked into that item of food and show a single-mindedness that tests the angler's mettle. Both the shape and light patterns of the waterborne ant are so distinctive that fidelity to the natural becomes a paramount requirement of any ant pattern. Most anglers regard the brown trout as the most finicky among the fish we pursue with flies. That had always been my view, too, until one day a few years ago when I witnessed an incredibly picky performance by a fish not generally regarded as selective.

It was September and we had temporarily laid aside our trouting gear in favor of big fly rods, nine-weight lines, fly reels the size of alarm clocks and popping bugs. We were wading the Allegheny River a few miles upstream of Kennerdell, Venango County, and fishing the clear shallows for smallmouth bass. Poppers were working well along the rocky shoreline in the morning and several fat high-jumpers came to net and were released.

After lunch, flying ants began to appear—red ants, about size 16—and suddenly the bass lost interest in our frog poppers. We watched, fascinated, as a bass of perhaps 16 inches took up a position in plain view and began to pick drifting ants from the surface. My immediate reaction was a feeling of elation because of the opportunity presented, but it quickly changed to disappointment when I realized I had nothing

remotely resembling a size 16 ant in my bass bug kit. Nor did I have tippet material finer than 2X with me. Perhaps it was just as well. I'm not sure I could have coped with the unusual feeding pattern the bass adopted.

In a similar circumstance, any self-respecting trout would have tipped up rhythmically, taking one ant at a time as they drifted overhead, but not that bass. He completely disregarded individual ants, even though they floated over him at intervals of two seconds or so. Instead, he waited until a closely spaced pod of many insects came into view. Then he aggressively swam forward to intercept his quarry, then moved in a circular pattern with his snout half out of the water as he scooped up ants en masse.

Then he settled to the bottom, face upstream, and waited for the next pod of ants to appear. Fascinated, we watched as the bass repeated this routine time after time until the supply of ants was exhausted. Then he swam off and disappeared in deep water.

I have since thought about that day many times and wondered how I'd have fished for the bass if I'd had the appropriate gear. His selectivity was more quantitative than qualitative, but the obvious solution of simulating a swarm of drifting ants with, say, a cast of a dozen flies on individual droppers would be out of the question. Perhaps casting a single fly to the cluster of drifting naturals might work. If you were

lucky, the bass might scoop up the fly with the others. Fortunately, ant-eating trout are more reasonable in their feeding habits and they don't begrudge the angler a sporting chance.

The Foam Flying Ant uses a single strip of evasote or Fly Foam, manipulated in virtually the same way a bundle of hair is used in dressing the Hair Carpenter Ant. The compressibility and elasticity of the foam permit the easy formation of the gaster and pedicel, the two body bulges separated by a narrow waist. The hair wing extending back over the abdomen represents one of the several wing positions commonly assumed when ants are on the water.

I normally dress the pattern in sizes 16 to 22 in both black and reddish-brown. However, if you fish for bluegills, I'd suggest you tie it in size 12 because the smaller sizes are difficult to extract from the tiny mouths of these scrappy panfish. Besides, the larger sizes tend to discourage the smaller fish, which can sometimes be a nuisance.

The example shown in the photographs is a red ant in size 16 and the foam strip is ¹/₁₆-inch thick, cut from a ¹/₈-inch sheet of white evasote. After the strip is cut, it is tinted with a permanent marking pen and allowed to dry before dressing. For smaller sizes, use proportionately finer strips. To tie a black ant, simply use a black marking pen, black thread and black deer hair for legs.



4 Cut a sparse bunch of fine, gray deer hair and tie it in as a downwing at the fore end of the waist. Trim the excess butts and apply a drop of thin lacquer to the wing windings.



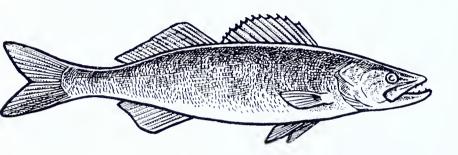
5 Tie in the remainder of the foam strip, butt forward, flush in front of the wing windings and trim any excess butt.



6 Pull the foam strip forward over the fore end of the shank and tie it down behind the eye with four turns, forming a forward bulge. Trim the excess foam, wind a neat head and whip-finish. Apply lacquer to the head and waist windings.

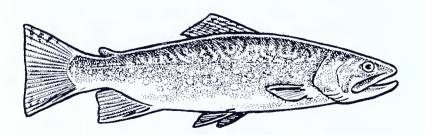
KipsPage! by Steve Ulsh

Most anglers put their fishing tackle away when summer ends. However, fall can be a great time to go fishing. Cooler temperatures, changing leaves and hungry fish can make your fall fishing trips great. Here are some fishing tips we suggest you try this fall.



Walleye

Look for walleye in deeper dropoffs than summer. Look for vertical cliffs along the shoreline. Try to find the channel portions of lakes and rivers. Use lures that resemble crippled baitfish. Use a jig with a live minnow attached. Don't use worms and nightcrawlers. Switch to live baitfish.



Trout

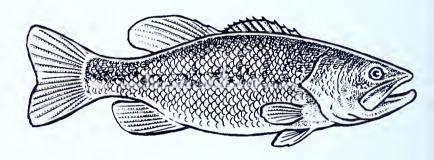
Look for back eddies in trout streams. These places are favorite feeding spots for brook trout. Look for "cruising" trout. Food isn't as readily available and fish must move more to find a meal. Use larger streamers than those you used in spring for trout. Trout seek larger meals in fall. Try live crickets and grasshoppers on long leaders. Don't wade if at all possible. Stay low and back from the water's edge. Low and clear water makes it easy for a trout to spot you.

Fall Fishing Tips



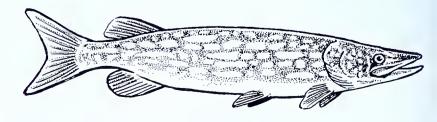
Bass

Fish as close to the shoreline and weed beds as you can. Bass love cover and they'll usually be there. Use small spinnerbaits. A 3/8-ounce size is a good weight to use. Look for disturbances in the water like leaping baitfish. Chances are a big bass is on a feeding spree. Cast something into the area that imitates a small fish.



Pickerel

Use a spinning rod baited with a four-inch shiner. Try a bobber for better casting distance. Be patient. Pickerel turn off and on in their feeding habits. Don't give up too soon. Set the hook after the second run. Pickerel usually don't swallow the bait until then. Wire leaders are helpful because large pickerel can easily cut a monofilament line with their large teeth. Look for weedy, stumpy areas. Pickerel love these spots.



How Effective Are Fish Attractant Scents?

by Ray Rychnovsky

On a recent smallmouth bass fishing trip with two friends, Price Hennan sprayed his lure with a fish attractant. His companions were skeptical and didn't apply the elixir. Fishing was good, at least for Price. By midmorning they had five bass on the boat, all caught on Price's rod with the specially treated rig. One of his companions said, "Let me try that stuff." He applied the magic potion and promptly landed the sixth fish on this "enhanced" lure.

It certainly appeared that the additive to the lure was effective, but when I've been fishing, very frequently one rod catches a disproportionate share of the fish. Many times, from all outward appearances, several rods are set up identically but something about one rig makes it much more effective. Was Hennan's hot rod a result of some unknown effect, and was it just a coincidence that all the fish were landed when an attractant was applied, or was it the attractant that made the rig effective?

I am a skeptic when someone tells me about an almost miraculous fish attractant. I want scientific data from controlled experiments under many conditions and over many days of fishing. Take a look at the scientific basis for these products to see if it is convincing.

Sense of smell

Experiments have shown that a fish's sense of smell is more than 1,000 times as acute as this same sense for a hunting dog. (A sense of smell for a fish in water is really a combination of smell and taste, but for now, I'll just refer to it as smell.) A fish's sense of smell is very powerful, and something that appeals to that sense has the potential for being an



Ray Rychnovsk

Scientific evidence suggests that certain concoctions actually do attract fish. Are you doubtful? Check out the claims and decide for yourself.

important aid to fishing.

Scientific proof that fish are attracted by some compounds and repelled by others has been documented. In 1954, a scientific journal reported that introduction of faint mammal scents in a river (including human scents) would temporarily repel salmon from their migration. In 1956 the substance that caused this reaction was identified as L-Serine, an amino acid present on the skin of mammals.

A paper presented in 1972 identified materials that attracted rainbow trout and others that repelled them. Similar studies have identified attractants for many fish from bass to carp. So scientific study tells us that known materials act as attractants and others are repellents. How do these translate into actual fishing situations?

Response to substances

Dr. Gregory Bambenek, a physician in Minnesota, who is also known as "Dr. Juice" of the product with the same name, was an early experimenter who attempted to determine the potential for fish attractants. In one experiment he observed the response of trout visible in clear water streams to various chemicals introduced upstream.

"Many substances resulted in no response," he observed. "For some materials, the fish would move from their position forward into a feeding location and for a few really effective attractants fish became aggressive and tried to eat any small object that was suspended in the water."

These results convinced Bambenek that fish attractants could be an important part of fishing. With many years of research, including scientific experiments in the laboratory and in the field, he has identified attractants that are effective for many species. These materials have been formulated into products that are optimized to attract each group.

"Essence" in natural baits

Dr. Keith Jones of Berkley and Company directed a detailed study of the essences within natural baits that attract trout, bass and catfish. His research started by grinding up minnows, earthworms, shrimp and other natural baits, and then analyzing the chemical compounds in these materials that were potential attractants. A small cotton pellet was soaked with a possible bait formulation and was dropped into a tank with a fish. "A fish will usually mouth the pellet but it will spit the ball out in a fraction of a second unless it likes the taste of the product," Jones observed. "If the chemical appeals to the fish, it will hold the pellet for a short time before rejecting it. For the most effective formulations, the fish will swallow the doped pellet."

Jones tested each mixture several times with many different fish and the average time that the fish held the pellet was the basis for ranking mixes. He analyzed the chemical composition of the most effective combinations. Then he removed compounds onc by one and repeated the tests.

As a critical substance was removed, the effectiveness of the bait would drop dramatically. That last deleted chemical compound was tentatively identified as a powerful fish attractant and subsequent tests confirmed its potency.

After building up a library of effective fish attractants for each species, Jones tested the combinations. He developed final formulations that had many times the concentration of the powerful fish attractants that were found in any natural bait. The company made complete bait formulations (named "Power Bait") as well as products that were to be applied to lures or bait.

Field tests

Finally, samples of this bait went to field testers for controlled experiments. Bob McMickle, vice-president of research and development at Berkley, took some of the trout bait to June Lake in California. Several testers used two-hook rigs with the Berkley bait on one hook and either salmon eggs or another prepared bait on the second hook. Every 20 minutes they reversed the bait to be certain the hook position was not a factor.

McMickle observed, "The Berkley bait caught an average of four fish for every one landed on either the salmon eggs or the other prepared bait."

Power Bait started with bulk bottles with formulations including one for trout and one for panfish. Today, power worms, power grubs and artificial pork rind have been added for bass anglers, and artificial marshmallows and power eggs add to the selection for trout

fishermen.

Bait replacements

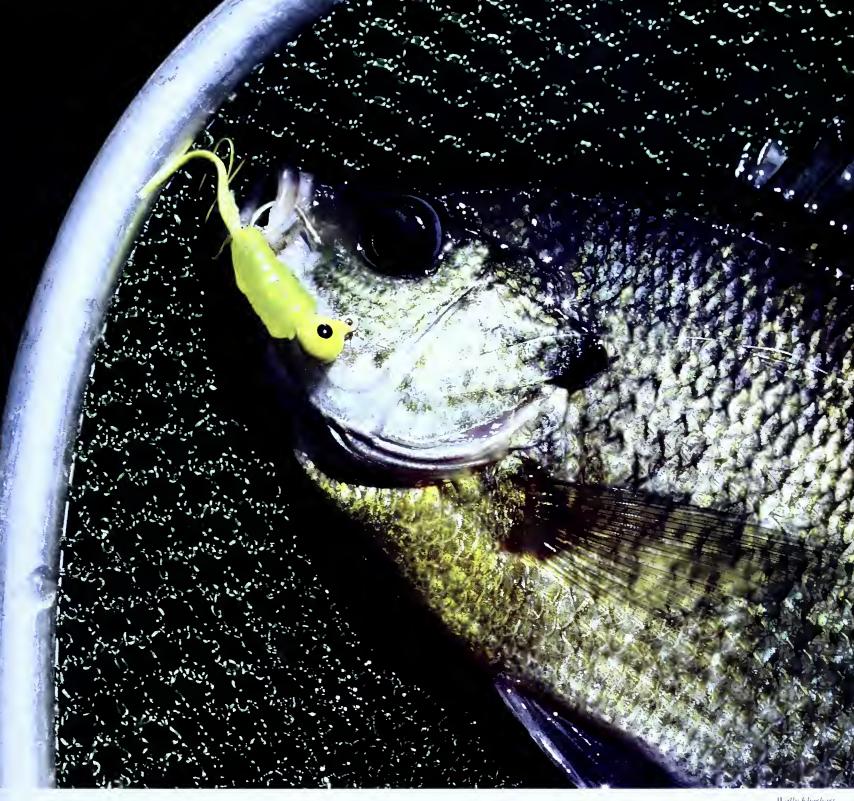
Ken Shipley, president of Geltech, a medical research company, combined results from his medical products and published studies of the effectiveness of fish attractants and research by Dr. Gregg Bambeck (no relation to Dr. Juice) to develop fish bait called Bionic Bait. While others have generally identified their products by the fish they attract, this product is identified by the bait it replaces, like worm, shrimp and minnow.

Perhaps as important as the makeup of the material is how it is applied and how long it is effective. For example, a material that very quickly washes off the surface of a lure will not be effective for long. Most makers of these products have developed a material that milks off the lure or the bait for some time to be potent for a reasonable period.

One of the contributions of Bionic Bait is that the attractant is emulsified in a tough, soft polymer that releases the compound slowly. Shipley advises, "The bait is effective for two or three hours, but to be certain that it retains high potency, it is best to replace it after an hour." He also pointed out that the basic polymer that holds the scent is very tough, so each bait stays on the hook and can be used to catch several fish.

All these researchers agree that fish have periods of intense feeding when almost any credible bait or lure will catch fish and other periods when they have been stressed or are momentarily dormant and will not eat. In the former case, fish take well-presented bait or lures with or without attractants; in the latter, fish aren't interested in even the best combinations. For these times, attractants aren't going to make much difference, but these researchers believe that fish are usually in an "in-between" feeding state where effective attractants may make the difference between a good catch and an empty creel.

Some tests during the Berkley experiments showed the importance of the state of the fish. Dr. Jones observed that when fish were moved into a tank for a test, they were highly stressed and agitated. The first day, they would avoid the feed pellets, and during the second day they took them erratically. Only on the third and subsequent days



did they settle down enough so that Jones and his researchers trusted the results.

One caution with these formulations: Some of them stain or dissolve the finish eoat on a boat, so apply them out over the water or over a container and avoid dripping them onto a boat.

Regardless of the scientific basis, what really counts is, "Does a product consistently attract fish?" Many smaller bait companies have developed products that have not received the controlled evaluation that large companies can afford. Some are based on fishing experiences and on testimonials like, "Charlie wins more bass tournaments than anyone else in the state using our

attractant."

That isn't scientific proof that the formulation is effective. Maybe Charlie is the best fisherman in the state and would win all these tournaments without a lure enhancer. Maybe the company has misinterpreted the tournament results or perhaps indeed it is a very effective attractant.

Miracles?

The evidence from laboratory experiments and field tests indicate that scents on lures and bait or new hightech bait itself may make an important increase in your eatch, but don't expect miraeles. It's still important to use good fishing practices, and even then during

some periods, the fish are off the bite and nothing will be effective.

When fish are on the bite, many different baits will entice them; but when fishing slows, the better attractants should stand out.

Scientific evidence demonstrates that a fish's sense of smell is one of its most highly developed senses. It is logical that a product which appeals to this sense would be an important part of attracting fish. Many producers believe their products are effective attractants. but you must be the final judge. Try them and see if they improve your catch. Use them systematically for a few fishing trips and then decide if they effective for you.



Once the secret big-bass bait of professional tournament anglers, more and more Keystone State fishermen are discovering what the pros have long known—lunker bass can't resist the jig 'n pig.

Rubber jig and pork chunk combinations aren't new to bass fishing, but the art and craft of jig 'n pig fishing is new to a growing legion of Pennsylvania anglers who are hard-pressed to find a more dependable and user-friendly bait for autumn largemouths. The lead jig and long-lasting pork rind combine to offer anglers a maintenance-free bait. No fuss, no muss.

Arkie Jigs and Stanley Jigs are two of the more popular weedless jigs on the market, featuring living rubber skirts threaded on a 1/4- to 5/8-ounce weedless jighead. These jigheads are designed so that the hook and pork rind sit up off the bottom, making it easy for the bass to pick up the jig and for the angler to set the hook. The weight of the jighead is determined by the depth of the water. As a rule, use the lightest jig that allows you to maintain contact with the bait as it free-falls naturally.

Pork baits

There are many sizes, shapes and colors of pork baits on the market today. For years the Uncle Josh #11 pork frog was the standard, but anglers also use the smaller #101 and larger #1 pork frogs when the situation calls for them. Some pork baits such as the new Berkley Power Baits are packed in fish attractant.

The size of the pork trailer depends on the size of the jig you are fishing. The larger the jig, the larger the pig. As the water gets colder, a long, slender split-tail eel is sometimes more effective. If you seek big bass, try a spring-lizard trailer.

Crayfish imitator

Underwater the jig 'n pig closely resembles a crayfish. According to Commission Area Fisheries Manager Dave Daniels, bass feed heavily on crayfish in the fall. In fact, says Daniels, at certain times of the year crayfish may comprise as much as 80 to 90 percent of a bass's diet.

Because largemouths feed heavily on crayfish in the fall, brown/ orange, black/brown and black/green combinations are effective. In clear water I have found that black/blue also works well.

Most successful jig 'n pig fishermen prefer a 5 1/2- to 6-foot medium heavy action graphite baitcasting outfit. These rod blanks feature a heavy butt to drive the big hook into the bass's hard mouth, and a soft tip to feel the jig crawl over the bottom. The length of the rod blank provides leverage for a quick, firm hookset.

Premium line in the 10- to 15-pound range handles well in baitcasting reels and withstands the impact of the hookset. High visibility or fluorescent line helps you detect the "tick" of a strike.

Where to fish

Breaklines, sloping points and bluffs or ledges are prime areas to fish the jig 'n pig. These areas are bass "supermarkets," attracting a wide variety of forage. As water temperatures drop, concentrate on the windward shores where the warmer surface water gets pushed.

Gradually sloping banks adjacent to deep water are also productive. The shallow water warms quicker than the surrounding water, yet the nearby deep water offers quick sanctuary.

One fall day while fishing a shallow bank in Marsh Creek Lake in Chester County, my partner and I caught five largemouths, each averaging nearly four pounds, in a 100-yard stretch. Holding our boat in about five feet of water, we cast our brown/orange jig 'n pigs onto the shore and hopped the baits back toward the boat. The fish were concentrated at the three-foot mark. Duplicating the shallow bank pattern in the next cove yielded four more bass.

Other waters where the jig 'n pig has proven itself as an effective fall largemouth bass bait include Tamarack Lake in Crawford County, Lake Arthur in Butler County, Raystown Lake in Huntingdon County and Lake Marburg in York County.

Series of hops

Fishing a jig 'n pig is very similar to fishing a plastic worm. The action, in this case a series of hops, is imparted using the rod tip. Cast the jig a foot or two beyond the target area and allow it to sink to the bottom. Gently hop the jig back toward you using the rod tip. In between hops, lower the rod tip and quickly take up the slack.

Most strikes come as the jig falls or while it momentarily rests. You feel a tap-tap or dead resistance. Bass also simply swim off with the jig at times, crushing the bait in their jaws. Like worm fishing, don't be afraid to set the hook hard.

Flipping

Flipping, one of the first true bass fishing specialties, is a productive way to fish a jig 'n pig when bass hold tight to cover. Most flipping rods feature telescoping blanks to facilitate storage, and are 7 1/2 feet long when fully extended. The action of a flipping rod is pool cue-like, easily handling baits weighing 3/8-ounce to two ounces and rated for 15- to 30-pound-test line.

Properly presented, the jig enters the water with little or no disturbance and free-falls to the bottom. One advantage of flipping is the ability to cover a lot of structure in a short time, according to Billy Murray, a nationally known bass angling instructor. Murray heads the faculty of the American Fishing Institute and presents the AFI Bass Fishing Institute in Hershey each spring. At the Chocolatetown seminars Pennsylvania anglers benefit from the experiences of recognized bass fishing experts.

Murray believes that bass hit the falling jig almost immediately as a reflexive or defensive reaction. For this reason, fishermen need only pump the bait once or twice before trying another target.

Flipping structure

Prime flipping structure includes brush piles, undercut banks, boat docks, diving platforms, tree stumps, retaining walls, bridge pilings and weed mats.

Flipping a jig 'n pig into pockets of submerged weed mats is a productive pattern on waters such as Struble Lake in Chester County and Pymatuning Lake in Crawford County.

Another jig 'n pig presentation favored by tournament pros is pitching, a long-range version of flipping. Pitching rods are usually 6 1/2 feet long and rated for 10- to 25-pound-test line to handle lighter jigs in the 1/4- to 1 1/2-ounce range.

No matter which largemouth bass water you fish this fall, you can count on the jig 'n pig.





I had been certain the smallmouth would cooperate following the afternoon rain, but they didn't.

After I lost my favorite streamer to a snag, I slapped my fly rod disgustedly against a branch. Droplets danced in a sparkling chorus line, but I barely noticed. Fishing had been poor for weeks and I was mad at myself for continuing to waste time on such a worthless sport.

Suddenly I heard an elephant-sized splash. I raced downstream and around the bend to the site of the sound.

An old man with unruly white hair bobbed along as the current filled his waders. "I slipped," he yelled through an equally white beard. "Can you give me a hand?"

I dragged him ashore and helped him pull off his boots. As he emptied his waders, two bluegills plopped out and tumbled back into the stream. "Been one of those days," he said as his rivergreen eyes appraised his dripping khakis and red flannel shirt. For a second, I thought that I detected a brief smile on the old man's tanned face. Then, he squished over to a stump and sat down.

"Why do we fish?" he asked abruptly, and I had the disturbing sensation that he had just read my mind. "Most times, we don't catch fish. We get wet and cold. Bugs bite us. We spend a small fortune on tackle. I mean, what's the point?"

I said nothing, but I enthusiastically agreed. I remembered a reckless sidearm cast and a hook that stabbed my lower eyelid. The wound itself was superficial, but the visit to the hospital was one of the most embarrassing moments of my life, especially because a worm was on the hook when it stuck me. I also remembered poison ivy and bee stings. I remembered broken lines. I remembered sunburns.

"What I'm trying to decide right now," the old man continued, "is whether to throw my rod and reel in the river or give it to my grandson. He would love to have it. But he's too young to know any better. I don't want it on my conscience that I influenced him to become a fisherman."

Again, I was taken aback. I remembered when I had been too young to know better. And I remembered the old man, a neighbor, who had influenced me to become a fisherman.

I remembered sleepless nights of expectancy. I remembered shivering in the boat so violently during the predawn that I barely could bait my hook. I remembered how sharp and good the coffee smelled in the thermos and how the air on the water smelled like sweet cucumbers. I remembered the sun finally warming my face, burning off the mist, and making mc inexplicably happy.

And I remembered how fishing continued to make me happy as I grew up. At first, I now recalled, I had



thought it important to catch a lot of fish. Then I had wanted to catch big fish. And I had caught my share in both numbers and size. But I knew for a fact that I had caught little or nothing on many of my fishing trips, and yet I couldn't remember a single time that I had come home from fishing unhappy.

Yet, I had been unhappy when I heard that splash, and if the old man hadn't started me to thinking...

What is needed, I decided, is a guardian angel of angling. He could, of course, meander down idyllic trout streams to make certain that hatching insects look like the flies carried by fishermen who are about to come along, and he could whisper on the wind to bass anglers, telling them when to use chartreuse and when to use white.

But more importantly, he could keep us from forgetting that fishing is a lot more than just catching fish. He could remind us that fishing restores our souls through sights, sounds and smells—and the memories that it revives.

This is a rebirth for me, I decided. Never again will I fail to appreciate the sun's magic on raindrops. Never again will I forget the pure pleasure I derive from being on the water with ducks, dragonflies, bullfrogs, beavers and all the rest—even if the fish aren't biting and I've lost my favorite streamer.

My eyes met the old man's then and I jerked back to reality. I smiled and told him that I once filled my chest waders with a farm pond while reaching for a moss-wrapped fish that was just out of grasp. "It's all part of fishing," I said with a shrug.

"If I were you," I continued, "I wouldn't give that rod and reel to your grandson. I'd buy him a new one and take him fishing with you the next time."

He laughed and slapped a hand against his stream-soaked pant leg. "You're right," he said. "But before I go I want to show you my appreciation for your help. I want you to have this."

He reached into his tackle bag and then extended his hand to me. As I opened my hand, he dropped a streamer into it—a streamer just like the one I had lost.

"We all need a little help every now and then," he said as he waved goodbye.



Streamers for Big Fish by Ed Howey

A nearby meadow stream on which I spend many hours lacks the cover provided by shaded banks, so the trout take shelter in miniature caverns scoured from soft soil beneath the grassy hummocks. A streamer twitched and drifted past these hideaways often brings the best fish of the day.

Sometimes forgotten in our rush to fathom the lore of insect imitation, streamers remain the fly fisherman's best shot at larger fish. They imitate the familiar and belly-filling food forms found swimming in most waters regardless of season, weather or time of day. Nor do we need dozens of patterns to imitate these food forms.

After trying this and that over the years, I carry just four streamers nowadays, patterns that are fairly easy to tie yet give as good results as more difficult ones.

Black Ghost

To imitate the swift, silverish minnows—shiners, smelt and the like—my favorite is the venerable Black Ghost. A supply of these in sizes 6 through 12 covers most of these slender baitfish species. The pattern comes in both standard saddle hackle and marabou wing versions. Carry some of each.

Mickey Finn

Dressed in still gaudier colors, the Mickey Finn remains popular because it produces, especially on brown trout streams where its colors suggest the fry of the species, a favorite meal of older family members. In sizes 4 through 12, this proven favorite makes an excellent addition to the fly book.

Both these patterns give off enough flash and sparkle to improve visibility in murky water, a most desirable feature in roiled streams.

Muddler

In no way flashy, the Muddler Minnow is perhaps the most versatile subsurface streamer-type lure ever conceived. It does its best work close to the bottom. The drab, brownish hues of the artificial suggest sculpin, stonecatties and the like, baitfish that skulk about the stream bed.

I carry the Muddler in both weighted and

unweighted versions, the weighted fly to get to the bottom where the naturals live, and the unweighted type to fish as a floating big fly imitation, especially during grasshopper season. Tied on size 6 to 12 streamer hooks and 10 to 12 dry fly hooks, my muddlers see action from early spring to late fall.

Wooly Bugger

The last member of the basic four is also a weighted pattern that doesn't look much like anything that swims, except perhaps leeches. But the fish take it for a variety of bottom-dwelling creatures including large dragonfly nymphs, stone fly nymphs and crayfish. This is the notorious Wooly Bugger, which I carry in sizes 6 through 10 in two shades—black and olive. Try to include a few buggers with a couple of strips of blue or silver flashabou built in.

These patterns can be found in fly shops and catalogs everywhere. You will also find dozens of others, many of them more realistic imitations than the ones I've chosen. Should any of these appeal to you, go for them. Nothing ups your score more than fishing confidently. Be sure, however, that the patterns you select cover the basic baitfish types, and remember that a few patterns fished patiently produce better than endless changing to something else.

Tackle

Fly tackle for streamer fishing should be lean to sturdy. I'm comfortable with an 8 1/2-foot rod matched to line in the 6- to 8-weight range. If you primarily fish streams for trout, use the lighter rig. If you want to use the same outfit for both flies and bass bugs, go with the heavier weight. With today's high-strength graphite, the stouter rigs are hardly too much for most of us to handle, and they certainly ease the chore of casting heavier and bulkier lures.

For most stream fishing I use a floating line with a 7- to 9-foot leader tapered to 4x, which is stout enough to handle the solid jolt that comes when you set the hook in a good fish. On large, deep pools in streams, and on ponds or lakes, both sink tip and

full sinking lines are useful. Sink tip lines with moderate sink rates (1.5 to 2.0 inches per second) provide some flexibility for working in middle depths, and the full sinkers with fast sink rates (3.5 to 4.5 inches per second) get to the bottom quickly in deeper water.

Keep in mind that sink tip and full sinking lines impart quite different action to your streamers. With sink tip lines, the floating portion starts the fly toward the surface as soon as the retrieve begins. With a full sinking line the retrieve covers some distance at a constant depth before the fly begins to rise.

In *The Practical Fly Fisherman*, A. J. McClane states a conclusion reached after conducting a set of experiments astream: "Eventually we decided that the only important thing about the sculpin was the way he swam..." Broaden that to include all types of baitfish and you've got words that a streamer fisherman can live by. The way the lure acts in the water is what sells the deal to the fish.

Stream technique

I think we'd be amazed at how long these curious customers hover around our streamers trying to decide whether to buy. Yet many anglers cut off negotiations far too quickly by yanking the fly out of the water to rip out another cast.

Be patient—fish out each cast thoroughly. After the usual upstream and across-stream beginning, let the fly drift freely until it passes to your downstream side. Then start the retrieve with a series of short pulls interspersed with twitches of the rod tip. An erratic, darting motion does better than regularly spaced and timed movements.

When the current lifts the fly to the surface, pay out additional line to create slack that lets the streamer flutter back down like an injured baitfish. To help keep the fly down, poke the rod tip into the water and hold it there as you work the streamer back on the retrieve.

Lakes, ponds

On slow pools where current is no fac-







Ed Howey

Using streamers opens the door to fooling more fish than just trout. Try them for bass, pike and panfish.

tor, and in stillwater ponds and lakes, the most important objective is to find the proper depth. Convincing support for this rule pops up repeatedly, most recently on a pond where a friend and I were both fishing Black Ghost streamers from opposite ends of a 17-foot canoe. On just about every third cast he hooked fat fish up to 15 inches, while my efforts came back empty. Finally I stopped thrashing long enough to learn what he was doing differently.

Simply enough, he allowed his fly to settle almost to the bottom in about six feet of water, whereas I had been retrieving at about three feet. Even at the six-foot depth, his Black Ghost was quite visible and as it darted over the bottom, shadowy forms materialized to inspect the intruder.

Then suddenly, the fly and the shadowy forms vanished and my friend's rod danced to the struggle of another fat fish. When I let the Ghost settle to the proper depth, my rod also danced.

Finding the proper depth for weighted muddlers and Wooly Buggers is no great problem because they are intended to suggest bottom-hugging creatures. The retrieve should move the fly along close to the bottom, kicking up a cloud of silt now and then.

If conditions permit, let the fly rest on the bottom as though it were all done in. Because of the built-in weight, these lures drop fast when the line goes limp. Take advantage of this by lifting, then dropping the rod tip during the retrieve to simulate a creature in trouble. Slow, herky-jerky, and close to the bottom best describe retrieve techniques for both muddlers and buggers.

Though fly fishing is widely perceived as an elite game for trout fishermen, streamer-type lures open the door to many other gamefish species—largemouth and smallmouth bass, pike, pickerel, and perhaps even the depth-loving walleye. Apply these ideas on streamers and streamer fishing to raise your score on big fish.



This article reviews past regulations, examines the potential effects on bass and on anglers of alternative regulations, and solicits the opinions of smallmouth bass anglers on how Pennsylvania might regulate stream and river bass fishing in the future.

The questionnaire following this article gives you the opportunity to let the Fish Commission know what you think about bass regulations for rivers and streams. Results of this survey will be used along with other information to help shape future smallmouth bass regulations.

1981 regulation changes

Bass throughout Pennsylvania's inland waters were managed for many years with a nine-inch minimum size limit, a closed season from March 14 through mid-June and a six-per-day creel limit. Increasing fishing pressure and angler desire for larger bass in their catches led to regulation changes in 1981.

Bass regulations for all waters were changed, but those for impoundments (ponds, lakes and reservoirs) were separated from streams and rivers. The reason for this separation was that fishing pressure was considerably higher on impoundments than on rivers, and the conservative regulations proposed for ponds, lakes and reservoirs would have been unnecessarily restrictive for riverine bass fishing.

The revised stream and river bass regulations included an increase in the minimum size limit from nine to 10 inches. This one-inch increase had the effect of protecting a substantial portion of the overall bass population. About 40 percent of the smallmouth bass over nine inches fell within the nine- to 10-inch interval that became protected in 1981.

On the other hand, the closed season for bass in streams and rivers before 1981 was eliminated, making it legal to harvest bass over 10 inches any time of the year from streams and rivers. Although the closed season between mid-March and mid-June amounted only to about 25 percent of the year, it represented a much greater portion of the April-through-October period when stream and river angling occurred. In addition, because smallmouth bass are particularly vulnerable during their spring spawning period, the real effect of the year-round season for bass on streams and rivers was a great increase in the opportunity to harvest smallmouth bass.

Smallmouth bass anglers quickly voiced their concern that the year-round open season was resulting in fewer legal size smallmouth bass. Fish Commission biologists simultaneously began to evaluate results of studies on smallmouth bass fisheries. These evaluations indicated that the abundance of smallmouth bass over 10 inches in electrofishing catches was indeed lower in many years since the 1981 stream and river bass regulation changes were in effect than the catches had been before 1981.

We should all be aware of the many variables that affect the strength of smallmouth bass populations (see "The Adaptable Smallmouth Bass" in the December 1988 *Pennsylvania Angler*). Our electrofishing samples are designed to provide an indication of the current abundance of smallmouth bass, which we can compare to the abundance of smallmouth bass in previous samples. Our samples were not intended to prove a cause-and-effect relationship between changes in stream and river bass regulations and changes in smallmouth bass populations. However, based on our findings it seems reasonable to conclude that spring harvest of bass is one of the factors contributing to the decrease in the number of bass over 10 inches.



Bruce Ingram

1987 regulation changes

Regulations for bass in streams and rivers of the Susquehanna River watershed were changed again in 1987. The change was intended to reduce the bass harvest during the spring spawning period. This was accomplished by creating a trophy season from mid-April to mid-June, when only two bass over 15 inches may be harvested each day. This regulation was designed to protect about 95 percent of the smallmouth bass during the trophy season.

On a year-long basis, the 15-inch minimum size limit during the spring reduces bass harvest by 25 percent. The minimum size limit for stream and river bass remained 10 inches with a six-perday creel limit throughout the remainder of the year.

There has been considerable vocal angler support for this more conservative approach for stream and river smallmouth bass management in the Susquehanna River watershed. Instituting the trophy season on the streams and rivers of the Susquehanna River watershed while keeping the year-round season on streams and rivers outside the Susquehanna River watershed has allowed the Fish Commission to compare changes among smallmouth bass populations since the trophy season was instituted in 1987.

The Commission had made comparisons of the electrofishing catches of smallmouth bass from sample sites in the Susquehanna River watershed with sample sites outside the Susquehanna River watershed. The results for 1988 showed that the abundance of smallmouth bass over 10 inches in the Susquehanna River watershed had increased so that the catches were no longer fewer than the catches seen before 1981.

However, samples from sites outside the Susquehanna River watershed continue to show that the numbers of legal-size smallmouth bass catches are less than half the historic numbers. It appears that the combination of the trophy season in the spring and the 10-inch minimum size limit for the remainder of the year have restored the smallmouth bass populations to pre-1981 levels in the Susquehanna River watershed.

Future regulation changes

There are other concerns for the quality of smallmouth bass fishing. One important issue is the desire of some anglers to have more big smallmouth bass in our river populations. To a fisheries biologist, allowing bass to get bigger when there is intense fishing pressure means adopting stricter regulations.

12-inch size limit

A 12-inch minimum size limit during the open season is one option for increasing the abundance of big smallmouth bass. Under current levels of fishing pressure for smallmouth bass, a 12-inch minimum size limit would reduce smallmouth bass harvest by about 60 percent on Pennsylvania's major rivers. That is, 60 percent of the smallmouth bass presently harvested are in the 10- to 12-inch size range. Even if half the bass saved by a 12-inch minimum size limit died of natural causes, other than fishing harvest, the result would still mean that nearly twice as many bass would reach 12 inches.

If the size of bass in the creel is your primary measure of quality, this idea should appeal to you. An additional desirable benefit is that the bass saved in the 10- to 12-inch range would be seen by more anglers as an increase in the numbers of bass that they catch, but the bass would have to be released unharmed.

There is a drawback to a 12-inch minimum size limit during the open season. On warmwater streams, where growth is slower and natural mortality higher than on major rivers, a 12-inch minimum size limit would protect a larger portion of the population and limit to a great extent the opportunity to harvest smallmouth bass.

Slot limit

The slot limit was first tried by some states on largemouth bass populations. The protected slot limit regulation is an approach designed to reduce the abundance of small bass, thus allowing the survivors to grow more rapidly into the protected slot. They couldn't legally be harvested, but they can provide higher catch rates of large bass. When the surviving bass grow longer than the upper limit of the protected slot, they are available for harvest in limited numbers at high quality or trophy sizes.

This approach is currently being tried on the smallmouth bass population in a small portion of the Potomac River in Maryland. The protected slot limit has appeal for managing smallmouth bass in Pennsylvania.

A protected slot size from 10 to 14 inches would work like this: During the season when the protected slot were in effect, anglers would be permitted a daily harvest of up to five bass less than 10 inches long and not more than one bass over 14 inches. Bass caught measuring between 10 and 14 inches would have to be returned to the water immediately.

Under these regulations, angler harvest should reduce the abundance of small bass that are usually numerous in Pennsylvania streams and rivers. The surviving bass would grow better with fewer natural deaths and reach the protection of the 10- to 14-inch slot faster. Bass in the protected 10- to 14-inch slot would provide anglers the pleasure of good catches of desirable size bass that would have to be returned to the water. Anglers would be permitted to take high-quality or trophy bass over 14 inches each day.

Part of the appeal of the slot limit is that it maintains continued bass harvest on warmwater streams while accommodating the growth and survival potential of major rivers to produce high-quality smallmouth bass fishing in Pennsylvania.

There might also be problems. This technique has never been used in Pennsylvania, and it could only be demonstrated by using it here. Harvesting small bass to create the thinning effect may seem strange to anglers and they may be unwilling to harvest small bass, which could limit the effectiveness of the regulation. A second and potentially more troubling concern is that some anglers might be unwilling to release bass in the 10- to 14-inch size range while harvesting smaller bass.

The utility of the regulatory approach to increase the abundance of smallmouth bass in the protected slot and increase catch and release of the protected bass would vary among streams and rivers. The water quality and physical habitat to hold and grow bass in the protected slot may in some waters limit the regulation's effectiveness regardless of angler support and cooperation.

Closed seasons

The "closed season" is universally acknowledged by sporting anglers as a time when total protection for a fish species should be maintained. Pennsylvania regulations allow anglers to catch bass and other fish during the closed season for that particular fish species as long as any fish caught are released immediately unharmed to the waters from which they were taken. The closed season for bass was abandoned on Pennsylvania streams and rivers in 1981.

Some anglers advocate a return to a closed season for smallmouth bass, particularly during the spring spawning period. Our current knowledge of the monthly patterns of angler use and bass harvest allows us to predict the level of protection that various durations of a closed season would provide.

A return to the closed season for riverine bass from mid-March to mid-June that existed before 1981 would result in a 30 percent decrease in bass harvest on streams and rivers where the year-round season with a 10-inch minimum size limit is still in effect. The reduction in bass harvest is not remarkably greater than the 25 percent reduction in bass harvest that could be expected by the 15-inch minimum size limit during the same period. Bass that survive the spring closed season would be available for harvest later in the year or in subsequent years as larger bass.

To illustrate the effects of a closed season further, consider that a closed season for bass beginning September 1 of each year and which remained closed until mid-June of the following year would reduce riverine bass harvest by 50 percent.

Regardless of the various regulations currently in effect throughout Pennsylvania the Fish Commission is confident that adequate protection is provided to ensure continued vitality of our small-mouth bass fisheries. We believe, however, that there is also the opportunity to enhance the quality of smallmouth bass fishing further by maintaining populations with more large bass. Each of us has our own ideas of what "quality" means in our stream and river bass fishing, but we need to reach a collective agreement on where we should go with our regulations. The various regulation options discussed above all have the potential to maintain and enhance the quality of smallmouth bass populations in Pennsylvania streams and rivers.

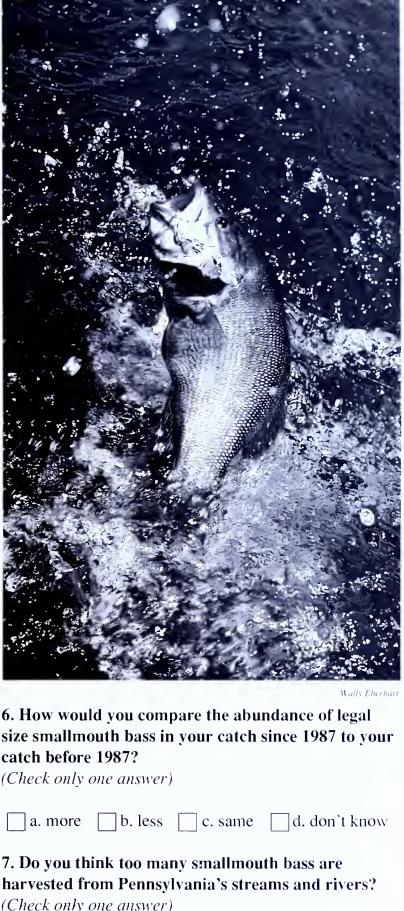
I have tried to explain some of the possible biological and social impacts of these various alternatives. Consider which of these options fits best with your ideas on the kind of stream and river bass fishing you would like to experience. Please take a few minutes to fill out the questionnaire that follows and let the Fish Commission know your preferences for future stream and river bass regulations.

Smallmouth Bass Regulations Questionnaire

Here are 15 questions designed to let the Commission know what you think about smallmouth bass fishing in Pennsylvania and regulations for bass on Pennsylvania's streams and rivers. Please answer the questions carefully. Your answers to these questions will be used in the future along with other information to set smallmouth bass regulations on Pennsylvania's streams and rivers.

For each question, check only one response that best describes your smallmouth bass fishing experiences on Pennsylvania's streams and rivers.

Pennsylvania's streams and rivers.
1. Do you fish for smallmouth bass in Pennsylvania's streams or rivers? (Check only one answer)
a. yes b. no
2. Do you fish for smallmouth bass in any of Pennsylvania's streams or rivers in the Susquehanna River watershed? (Check only one answer)
a. yes b. no
3. Do you fish for smallmouth bass in any of Pennsylvania's streams or rivers outside the Susquehanna River watershed? (Check only one answer)
a. yes b. no
4. Rate the quality of smallmouth bass fishing in Pennsylvania's streams and rivers. (Check only one answer)
a. excellent b. good c. fair d. poor e. unsatisfactory
5. Which one of the following is the most important to you as a measure of high-quality smallmouth bass fishing? (Check only one answer)
a. size of bass b. numbers caught c. no opinion



at more got less got same got don't kno
7. Do you think too many smallmouth bass are harvested from Pennsylvania's streams and rivers' (Check only one answer)
a. yes b. no c. no opinion
8. Would you favor stricter regulations if they increased the number of smallmouth bass over 10 inches in Pennsylvania's streams and rivers? (Check only one answer)
a ves b no c no opinion

9. Below are three general statements that show how smallmouth bass in Pennsylvania's streams and rivers might be regulated in the future. Which do you prefer? (Check only one answer)	12. Below are three specific alternatives for regulating smallmouth bass in streams and rivers during the open season, which starts in mid-June and runs to the next spawning season. Which do you prefer? (Check only one answer)
a. Use more restrictive regulations such as higher minimum size limits, reduced daily creel limits and longer closed seasons.	 a. Keep the present 10-inch minimum size limit and six-per-day creel limit. b. Use a 12-inch minimum size limit and keep the
b. No change in regulations.	six-fish-per-day creel limit.
c. Use less restrictive regulations such as lower minimum size limits, higher daily creel limits and shorter closed seasons.	c. Use a protected slot limit from 10 to 14 inches and keep the six-per-day creel limit, of which five less than 10 inches and one bass over 14 inches could be harvested each day and all bass between
10. Below are three specific alternatives for regulating	10 and 14 inches would have to be released alive.
smallmouth bass in streams and rivers during the spring spawning period (mid-April to mid-June). Which do you prefer?	13. If you selected a slot limit (c) in # 12, what would you want as the limits of the protected slot?
(Check only one answer)	Lower inches
a. A trophy season; 15-inch minimum size/two fish per day creel limit.	Upper inches
b. A closed season; with no bass harvest during the spring.	14. If you could set the minimum size limit during the regular open season for smallmouth bass, what size
c. An open season; with a single minimum size limit year-round.	would you choose?
·	inches
11. If you chose a closed or trophy season (a or b) in #10, which dates would you choose for it to begin and end?	15. If you could set the daily creel limit during the regular season, what number of bass per day would you choose?
Beginning date: monthday Ending date: monthday	number
PENNSYLVANIA	Now that you have completed the survey questions, please mail only the survey form to the Pennsylvania



Now that you have completed the survey questions, please mail only the survey form to the Pennsylvania Fish Commission to be sure that your opinion counts. Do not hesitate to include any other comments that you might want to make. Mail your completed survey to: Rickalon L. Hoopes, Pennsylvania Fish Commission, 450 Robinson Lane, Bellefonte, PA 16823. The Fish Commission will not consider surveys received or postmarked after October 15, 1990. Survey results will appear in a future issue of *Pennsylvania Angler*.

Anglers Currents

KARE Program Honored

The Fish Commission received the American League of Anglers and Boaters' (ALAB) first "Aquatic Resources Education Award" last June during Chartmaker 2000, a national conference of boating and fishing community leaders, held in Washington, DC. The award recognizes the Commission's pioneering work in aquatic resources education in its Keystone Aquatic Resources Education (KARE) Program.

KARE is unique in its strong emphasis on aquatic ecology and resource conscrvation, and for responding to the needs of teachers.

Pennsylvania's efforts were funded in part by money from the Aquatic Resources Trust Fund, commonly known as the Wallop-Breaux program. The fund collects federal excise taxes paid by the national's 70 million anglers and boaters on motorboat fuel and fishing equipment and returns the money to the states for boating safety, fishing enhancement and improved public access to the nation's waterways.

The American League of Anglers and Boaters is a national coalition of more than 30 boating, fishing and conservation organizations.

The American League of Anglers and Boaters' (ALAB) first "Aquatic Resources Education Award" presentation last June in Washington, DC, included (left to right) Dallas Miner, Ed Miller, Cheryl Riley, C. Blake Weirich, Kimberly Mumper and Steve Ulsh

Dallas Miner is a member of the ALAB Board of Directors. Ed Miller is Executive Director of the Fish Commission. Cheryl Riley is Director of the Commission Bureau of Education and Information. C. Blake Weirich is the Commission Resource Planner and former Aquatic Resource Education Coordinator, Kimberly Mumper is Aquatic Resource Education Coordinator, and Steve Ulsh is Aquatic Resource Education Manager





Edward S. Pashel nailed this 19-pound carp last season using corn for bait. The fish measured 33 inches and Pashel wrestled in the fish on 12-pound-test line.



Four-year-old Jennifer Hand's expression suggests how seriously she takes fishing. She was trying her luck at Boiling Springs last April.



Autumn Spontak, of York Haven, caught thús liefty bluegill in the Susquehanna River at Goldsboro last September. She fooled the fish on a worm with spinning tackle

ANGLERS CURRENTS

State Record Smallmouth Bass

Charlie Pence, of Franklin, PA, hefts the new state record smallmouth bass, which he caught in Lake Erie on April 29. Pence was jigging with baitcasting tackle and 8-pound-test line when he boated the big fish. The brute measured 24.5 inches long with a girth of 18.5 inches.

The 7-pound, 10-ounce fish bests the old state record by 4.5 ounces. That record has been unchallenged since 1983. Larry Ashbaugh caught the former state record fish in the Westmoreland County portion of the Youghiogheny River.

This new state record smallmouth bass is the 23rd state record set in the last 10 years. This number includes all species for which the Commission maintains records.



Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

EXECUTIVE OFFICE Edward R. Miller, P.E.,

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Allison J. Mayhew, Director Rafael Pcrez-Bravo, Personnel Glen Reed, Federal Aid Mary Stine, Fishing Licenses

BUREAU OF FISHERIES 814-359-5100 Delano Graff, Director

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Shyrl Hood, Division of Warmwater/
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Edward W. Manhart, Director

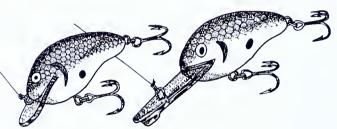
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BUREAU OF EDUCATION & INFORMATION 717-657-4518

Cheryl K. Riley, Director Larry Shaffer, Publications Stephen B. Ulsh, Education Kimberly Mumper, Education Dave Wolf, Media Relations Art Michaels, Magazines Ted R. Walke, Graphic Design

Angler's Notebook by C. Boyd Pfeiffer



You can look at any crankbait and get an idea of how deep it will run. The more closely parallel the bill is to the body and the longer the bill, the deeper the lure will dive.

Fall bass tend to reverse their early springtime patterns as they head out to deeper water for the coming winter. Search the same structure, breaklines and ambush points, you fished in spring for fall success.

Those small, hard, foam mats made for kneeling when scrubbing a floor are ideal as small, lightweight boat scats or knee pads for canoeing.

Save those old two-part ball point pens, and use the end of one as a half-hitch tool for fly tying. Use a large one, split on one side lengthwise, as a guard to place over the head of small flies to keep the hackle out of the way when tying the head.

Cut "V" notches in the ends of a cardboard box and cut the front out to make a simple "rack" for rewrapping rods. To make a simple rod wrapping tool place the winding thread in a coffee cup to keep it from rolling around, and run the thread under the box and through some clean typing paper (to keep the thread clean).

Use old socks as bags to hold reels and spare spools. This is especially good for travel to prevent reels from knocking together in a duffle bag or suitcase.

To keep pinch-on sinkers from sliding on the line, pinch one end over the line, wrap the line several times around the body of the sinker and then pinch the other end. The line can be loosened to move the sinker, but it will not otherwise slip.

An easy way to mark your fly lines with their AFTMA weight is with a black felt-tip marker. Use a broad band to indicate "5" and narrow bands to indicate "1." Thus, four narrow bands marked on the end of the line is a four-weight line; a broad band and two narrow bands is a seven-weight.

Fish often like the warmest part of a lake in fall and spring. Search out those shallow bottoms that are dark-colored, because dark colors absorb heat better than light or sandy colored bottoms. Also, with the sun changing direction (dropping to a lower angle) in the fall, fish more on the north side of waters because more of the south shore will be in shade.

When repainting your aluminum boat, make sure that the paint does not have metals in it that will react with the boat. Different metals in paint can cause electrolysis and damage the boat.

Cut the brush off of an old toothbrush and file a notch in the end to make a simple hook disgorger.

Fall fishing can be cold. If you don't have a pair of the new fingerless fishing gloves, you can make a pair easily by cutting the tips off of an old pair of wool gloves. For just casting, cut off the index finger for spinning reels, the thumb for casting reels, or the tips of all fingers to be able to tie knots.

illustration- Rose Boegli

On the Water

with Dave Wolf

The Single Mother

Linda and Jim had been married for six years. Paul came along after four years of marriage. Linda and Jim were elated, a child of their very own, one they bragged about often. They were an average American family and like many such families, things began to sour. No one was sure why they parted, but they did. Linda continued working full-time and gained custody of Paul, now three, and Jim left the state, hoping to start a new life.

Jim picked Paul up on weekends and occasionally on holidays. Linda did her best to be mother and father to Paul and to earn enough money to keep the family going. Jim met his financial responsibilities with childsupport payments and Linda and Paul, although not rich, enjoyed a good life together. They went to movies and amusement parks and she enrolled Paul in swimming classes, and at the age of six he played little league baseball. Paul was certainly not a neglected child and both Jim and Linda showered the boy with love.

Jim climbed the corporate ladder and his position called for a lot of evening and weekend work that often included travel. His weekend visits became less frequent, and when Paul did get to see his father, it was only for short periods. Jim tried his best to make their time together valuable, and on one occasion Jim took Paul on a canoe and fishing trip. The excursion was brief, a few hours during a free afternoon, but the experience had excited Paul, and he came home to tell his mother that he wanted to learn how to fish. Linda loved the outdoors and she fondly recalled the times Jim had taken her camping and hiking. Although Jim had gone fishing with "the boys" on occasion, they

had never fished together. Linda, born and raised in the city, had never fished.

Linda, excited over trying something new with her son, called the local tackle shops for information on fishing schools. She had planned to find a class that she and Paul could take together. She felt that it would be good for both of them, something that would bond their relationship even closer. Linda spent hours on the phone, only to find that most fishing classes were geared to fly fishing and were expensive. Many required entire weekends. Linda would have considered such a class, but didn't think either one of them was ready to jump into fly fishing. She had simpler methods in mind, less expensive equipment and easier-to-catch fish. She knew of a pond close by where many anglers gathered and caught fish. She did not know what kind of fish they caught, nor did she care. She wanted to take her child fishing and the size or type of fish did not matter.

Although disappointed, Linda tried buying equipment at the local



tackle shop. She was intimidated by all the questions the clerk asked. "What type of rod do you want? What pound-test line? What kind of reel do you want—baitcasting, spinning, open-faced or closed-faced? What are you going to be fishing for? What kind of lures do you want?" Linda fled the shop nearly in tears. How could she explain to Paul that fishing was out of the question?

That evening Linda and Paul walked past the small pond. Anglers ringed the waterway and some were catching fish. She noticed Paul's shoulders slump and watched him shove his hands into his pockets as she tried to explain why they could not go fishing. He looked at her with a saddened face. She felt a warm tear stream down her cheek, and she quickly brushed it aside. Somehow the pain of letting down her son riveted through her body and she longed for someone to take her and Paul fishing. The anglers at the pond were not aware of Linda's problem—if they had been, they would have explained the sport to her and they would have

taken her and her son fishing—of that I am sure.





Straight Talk

Future Boating Fun Depends on You



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

During the month of August, public meetings on Pennsylvania's boating programs were held at three different locations: August 10, a Senate Game and Fisheries Committee hearing at Lake Wallenpaupaek; August 17, a Boating Advisory Board meeting in Erie; and August 19, a Boating Advisory Board meeting in Pittsburgh.

At each of these sessions the public was given the opportunity to voice eoncerns about many boating topics. Dozens of interested boaters participated. They expressed eoneems about the numbers and sizes of boats, boating education program efforts, unsafe boating practices, improved enforcement efforts, program funding, boating access, registration of all boats and many other important issues.

For the most part, there was widespread agreement that 1) the Fish Commission is doing a good job with boating education, law enforcement and providing public boating opportunities; 2) more funds and personnel are needed to allow the Commission to broaden its efforts; 3) increased control of large and fast boats is needed at many locations; 4) responsible boaters are willing to pay for the present and increased boating services; and 5) all boaters should share the cost of these services and be included in safety and education efforts.

The need for a well-planned statewide eomprehensive boating program is well-recognized by responsible boaters in all regions of the Commonwealth. This need is most apparent to boaters in heavy use areas, such as the Pittsburgh Three Rivers, Lake Erie, Presque Isle Bay, Philadelphia and the lower Delaware River, Lake Wallenpaupaek, Harveys Lake, the lower Susquehanna River, Lake Winola, Lake Raystown, and other lakes and rivers of the Commonwealth.

During the past 17 months, 31 boaters have lost their lives on Pennsylvania waters. Of these deaths, 22, or 70 percent, have been in unpowered boats. Most of these fatalities were from eapsizing. Not one of these fatalities was caused by a collision between two powerboats.

The Commission has shown great eourage and leadership in its efforts to extend successful powerboating program benefits to the unadvised non-powered boaters. The Pennsylvania Department of Environmental Resources took the initiative many years ago by requiring that all boats using our state parks be either registered or specially permitted at a fee of \$5. Many of our state forestry boating facilities also have this requirement. The Commission's proposed regulation to require registration at Commission facilities is an important step toward preventing more unnecessary loss of life and property. It also helps offset the cost of providing and maintaining clean water and safe facilities. It is a proposal that is welcomed by all powerboaters and responsible citizens.

Very shortly, the Commission will be seeking legislation to bring eurrent boat registration fees up to date. Current fee structures have not been changed in 28 years, and it is impossible to meet current demands with revenues from these ridiculously low registration fees. Inflationary costs have increased nearly three fold in the past three decades, and it is time to bring this important part of Pennsylvania's program up to date.

The Pennsylvania Fish Commission needs your support to obtain new regulations and legislation neessary to accomplish these goals. Please advise your state senators and representatives of your support for a well-funded effort. Your support is essential because the future of safe boating in Pennsylvania waters is at stake.

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The cover

Joe Workosky photographed this issue's front-cover portrait of walleye fishing success. Ensure your fall walleye fishing success by applying the ideas in the feature beginning on page 16. The article on page 8 explains a lot about the importance of trout cover, and the story beginning on page 4 describes an insidious threat to Lake Erie and to other Keystone State waterways of which we all must be aware. Autumn provides chances for fast smallmouth bass action, so on page 10 read up on ways to score. No matter which fish you like to catch, are you really setting the hook properly? Better check out page 14. Finally, the year 1991 marks the 125th anniversary of the Pennsylvania Fish Commission and the 60th anniversary of *Pennsylvania Angler*. See this issue's back cover to commemorate these milestones.

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Pennsylvania is Becoming MUSS = Bound

by Mike Simmons

There are few "bad news" stories that do not have at least some good news in them—few that do not have occasional threads of silver lining woven into the dark clouds. Unfortunately, this is such a story.

Scientists estimate that sometime in 1985 a freighter (or freighters) discharged water from ballast tanks into Lake St. Clair, that small pond between Lake Huron and Lake Erie on the Detroit River. Emptying ballast before taking on cargo is not an unusual activity for ocean-going ships. However, this particular ballast had been transported across the Atlantic from a European port, and contained within the foreign water were free-floating *Dreissena polymorpha*, more commonly known as zebra mussels.

These small creatures originated in the Caspian Sea. But thanks to a flurry of canal-building throughout Europe in the 18th century, they were allowed to spread across the continent and into Great Britain. A freshwater species with a decided preference for a clean environment, zebra mussels largely avoided the polluted harbors of Europe. Thus, their further spread to distant ports via commercial shipping was prevented. Ironically, this century's environmental movement to clean the waterways of the world has been very effective in Europe, encouraging the migration of zebra mussels to seaports and eventually into the ballasts of freighters.

Now they have arrived in North America, and their effect will be devastating. U.S. Fish and Wildlife officials estimate that more than \$2 billion will be lost to commercial interests that rely on water from Lake Erie for their business and that there will be an additional \$2 billion loss to the fishery—all during the next decade. The most grim prediction is that there could be a 30 percent reduction in Lake Erie fish populations.



The most grim prediction is that there could be a 30 percent reduction in Lake Erie fish populations.



When the first zebra mussels invaded the waters of Lake St. Clair and Erie's western basin, they must have thought they had landed in paradise. Small in size (most adults are about the size of a fingernail, zebra mussels feed by filtering water through their digestive system. Their primary food is phytoplankton, one of the lowest levels of the food chain. Although they digest only that food useful to them, they also process uneaten plankton back into the water as pellets called pseudofeces, thereby removing from the food chain virtually all particulate matter in the water.

Lake Erie has long been recognized as the most fertile of the Great Lakes. This feature has made the Lake Erie fishery one of the most prolific in the world. The shallow waters and nutrient-rich wetlands of its shores have provided an abundant forage base for all levels of Lake Erie's diverse ecosystem, to include large populations of walleye, yellow perch, smallmouth bass and other native species. Unfortunately, this same fertility is much to the liking of the zebra mussel. Mike Simmons

Potent force

At first, it would appear improbable that such a small, apparently immobile creature could do any real damage in a 10,000-square-mile lake. However, the zebra mussel is a potent force. According to biologists, one adult zebra mussel can filter approximately one liter of water every day. Add to that the facts that zebra mussels live for an average of five years, and that each female can produce 150,000 offspring during that time, and the potential for the mussels to seriously disrupt the lower levels of the food chain becomes obvious.

> Dr. Ronald Griffiths, an aquatic biologist with the Ontario Ministry of the Environment and a specialist on the zebra mussel, estimates that when mussel populations peak in the next few years, they will have the capacity to filter the entire western basin every few days. This will clear the algae from the water and greatly improve its clarity (it already has). Such an event could be interpreted as good news, but it isn't. The clarity is actually the result of the mussel's ability to transfer all the nutrients out of the lake.

As if being first in line and greedy at the food table weren't enough, there are other ways in which the zebra mussel could adversely affect the Lake Erie fishery. The mussels tend to colonize the rocky areas along the shallow

Mussel dispersal in Lake Erie is east to west. Off Erie, mussel infestation on buoys was 20 percent with no layering yet.



shoreline—precisely those same locations preferred by most species of spawning gamefish. The pseudofeces discharged from the mussels settles to the bottom, consuming oxygen during the decomposition process and creating an acidic environment in the immediate area. How this will affect future spawning activity is not presently known, but biologists are monitoring the situation with concern.

Thread and "super glue"

So how do these little pests spread? Actually, zebra mussels are far from immobile. They disperse shortly after hatching, when they are in their larval stage. Called veligers, the larvae ride the currents, suspended in water for more than a week. At some point, the larvae attach themselves, using tufts of byssal thread extending from the hinged area of their shells. These threads secrete an adhesive that has been compared to super glue, enabling the mussels to cling to virtually any hard surface and develop into a typical double-shelled mussel. The newly formed adult immediately begins the reproduction cycle again.

This dispersal in Lake Erie has been largely a west-to-east affair. Extensive colonization has already occurred in Lake St. Clair and near Detroit. Off Pelee Island, on the Canadian side, some beaches are so littered with mussel shells that shoes must be worn for foot protection. Roger Kenyon, of the Fish Commission's Lake Erie Research Unit, reports that scientists trawling for zebra mussels this past summer in the western basin were able to collect an average of 30 pounds of mussels per 10-minute trawl. Density is obviously a matter of concern.

In the fall of 1989, the U.S. Coast Guard surveyed mussel infestation on its buoys scattered across Lake Erie. Coverage was thickest from the lower Detroit River to Huron, Ohio (100 percent at 1.5-inch thickness). Off Erie, coverage was 20 percent with no layering. At Buffalo, NewYork, the coverage dropped to five percent, again with no layering. The trend is clear, however. Zebra mussels are moving eastward, and according to Del Graff, director of the Fish Commission Bureau of Fisheries, their presence has already been confirmed in western Lake Ontario.

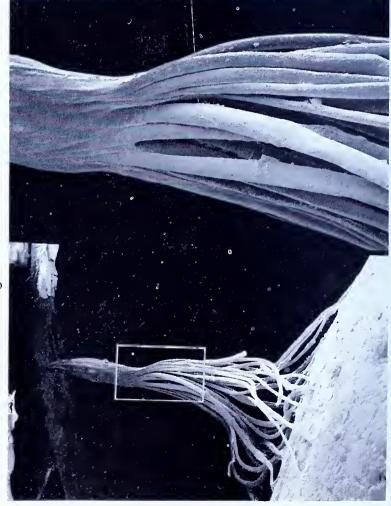


Dr. Larry Eckroat

Zebra mussel assault plan: Larval mussels drift in currents and grip hard surfaces. Electron microscope photographs (left and below) show two byssal threads (left) extending from a zebra mussel. Note that the threads divide to form feet where they "glue" themselves to a rock. The split photo below shows a single thread stem (lower portion of photo) projecting from a mussel shell. The stem divides into many threads (upper portion of photo) that attach to a hard surface.

Stopping zebra mussels

What can be done to stop the zebra mussel? If there is a way to be found, it will probably come first from industry. An answer is certainly what the folks at Monroe, Michigan, wanted to know a year ago, when mussels colonized their water intake pipes. The intakes eventually clogged and Monroe is spending \$1.2 million to try to control the zebra mussel numbers. Similarly, Buffalo, New York, mayor James Griffin announced last May that mussels had infested the city's water intakes to a density of 500 mussels per square inch and that at least \$200,000 would be spent in an effort to clean them out.



Dr. Larry Eckrout



Mike Simmons

There are many ways to kill zebra mussels. Chlorine and other chemicals will do the job, as will heating infested water to at least 105 degrees or passing the water through ozone. All are expensive and largely ineffective in the open lake. Furthermore, several species of diving ducks, particularly scaup, have shown a preference for eating zebra mussels. In Europe, actual migration routes of waterfowl have changed to include locations where zebra mussels are concentrated. Last year, a similar flyway accommodation was observed on the Canadian shore of Lake Erie.

However, the reproductive rate of the mussels is far too great to be controlled in any significant manner by waterfowl. Most scientists agree that the mussels are here to stay and that we should concentrate our efforts on learning to live with them.

Inland threat

"So what?" you say. As an inlander, why should you be concerned with this Lake Erie problem? Think again. The zebra mussel may soon be featured at a lake in your neighborhood.

Remember that veligers attach themselves to any hard surface. That includes boat hulls. Any boat trailered to Lake Erie for a weekend or a single day has the potential to carry zebra mussels to inland waterways. The mussels are capable of surviving for extended periods out of the water, only to continue their life (and reproductive) cycle when reintroduced into a suitable aquatic environment. Furthermore, adult mussels or veligers can invade bilges or even bait buckets dipped into Erie waters. These also can be transported inland.

Zebra mussels are a freshwater species that prefers clean environments. Most adult zebra mussels are no bigger than a fingernail.

This potential lcd the Fish Commission to issue advisories last spring, cautioning boaters to clean their bilges and inspect their vessels when traveling to Lake Erie. However, even with the most conscientious efforts by traveling boaters, the zebra mussel can still find its way to Pennsylvania's inland waters.

Like the Europeans, Americans have been canal builders. The zebra mussel could easily reach Pittsburgh (and three major rivers) by journeying up the Cuyahoga River in Ohio and using the Ohio Canal to reach the Ohio River watershed—and western Pennsylvania. And, as if that isn't enough, migrating waterfowl can carry the creatures as stowaways in their feathers as they pass from water to water.

The definitive prognosis for the zebra mussel problem is not yet known. By examining the European experience, scientists have learned that the normal course of events following an invasion of zebra mussels is for populations to increase dramatically for approximately five years. This is followed by a population crash due to mussel numbers outstripping the available food supply. After that, zebra mussels remain at lower, but more stable, populations. Their numbers remain fairly consistent with available food. In periods of great algae blooms, mussel numbers will rise temporarily. Conversely, they dip when phytoplankton is scarce.

Joe Leach, a fishery biologist with the Ontario Ministry of Natural Resources, probably best sums up the situation in stating, "Like all biological invasions, they will reach a limiting capacity when they have consumed all the food in the lake or occupied all the space."

Unfortunately, consuming all the food in Lake Erie could very scriously affect the fishery as a whole. Right now, the Fish Commission is watching developments very closely. No one was keeping records during the European zebra mussel invasion 200 years ago, so today all involved conservation agencies are treading unknown waters.

Only one thing appears certain now. There is no good news regarding zebra mussels.

by David F. Houser

As night falls, the sound of moving water grows louder. After the shadows have disappeared, a large brown trout, tucked under a root-tangled bank, stirs; her stomach is empty. It has been 12 hours since she last ate and then she consumed only a couple of dace minnows. Her hunt was disturbed. A creature stumbling on the rocks in the riffle above the pool spooked her back into her lair.

She is old; seven years have passed since her birth in an upstream redd. During this time, knowledge, through the ability to adapt to her environment, has created the nocturnal carnivore she is now. With over two years' experience at home in this pool, she knows every nook and cranny, every hiding place and feeding station.

approach. The suckers are quick, but the element of surprise is with the hunter. An eight-inch sucker becomes a meal to an old competitor in an ancient game.

She moves quickly back to the security of the undercut bank where she will stay until the next hunt. She'll venture out only if all the elements are correct for another safe and silent trip to the open water. For this scene to be played, all the elements must be ideal, from the most basic element, water quality, to what might be considered by some a smaller element, cover.

Cover may be as important to fish as it is to humans. When we enter cover (such as our homes on a stormy night or a motel room in a strange town or city), we feel more secure and confident.



Trout use cover as feeding stations from which they ambush prey or as protection from currents when feeding.

When it is completely dark, she begins to enter the pool, leaving the protection of the undercut bank. She moves upstream from the deep water of the pool toward the shallower water at the tail of the riffle.

In an eddy near the riffle's entrance to the pool, a school of suckers rests after a long day of scavenging on the bottom of the pool. Suddenly the school scatters, somehow sensing the brown trout's

Trout also use different types of cover—as feeding stations to ambush prey or as protection from currents when feeding. In the clear waters of northcentral Pennsylvania freestone streams, brook and brown trout, survivors of past stockings, or native-born fish, still sluggish from the cold waters of spring, spend a great deal of time in cover. An angler's bait or natural forage must be within easy reach if these fish are to dine. These trout use cover for security



Cover is a necessary part of a trout's environment. If we want high-quality trout streams, we have to protect cover where it exists and provide it where there is none.

and feeding opportunities, relying on the ambush possibilities found in cover.

The normally larger, somewhat more stable environments of valley limestone streams may provide habitats or cover similar to the freestone streams of the mountainous regions. Compared to the freestone stream, productivity of the food chain is increased because of the high nutrient content of the limestone water.

Aquatic vegetation plays a large part in predator/prey/cover relations. Because of the abundance of invertebrates, crustaceans and forage fish, trout may use the blanket of aquatic vegetation to feed at mainstream stations, feeling quite secure because of the low light conditions provided by the vegetation.

Light, or rather the lack of light, appears to play a big part in trout cover. Shaded



David F. Houser

or filtered light is found in most types of trout cover. For example, the limbs of a fallen tree may provide simple shade; a deep, dark rock ledge allows very little light to enter at all.

Deep pools provide cover by filtering light, just as fast water in a riffle may provide protection from predators while foraging at feeding stations. Low-light conditions may also help mask the trout's presence, allowing ambush of prey to be more successful.

Many of the larger trout we find through electro-fishing in coverrich environments are quite dark in color; this may indicate the low-light conditions that these fish rely on for survival.

Cover in any particular stretch of water is ever-changing because of the unstable environment in which a trout lives. A trout's intelligence can be measured by age, because its intelligence is the ability to adapt to an ever-changing environment.

If trout are to reach maturity, the young of the year must have adequate cover, which may differ from juvenile and adult requirements. In many cases, small side channels stemming from the main stream may provide a shallow water environment more suitable for maximum protection than the main stream itself.

When spooked by a potential predator, trout in cover can feel quite secure, much like the ostrich with its head in the sand. Trout may be fooled into thinking that if they can't see you, you can't see them. In many cases, trout can be gently touched while under

An undercut bank (above) is excellent tront cover. Trout feel secure in cover. Without adequate cover, naturally reproducing trout populations won't have a balance of year classes and sizes of fish.

cover, with little disturbance. Expert hand-fishermen have been known to coax a fish dinner from cover, even though the trout assumed it had a secure place to hide.

Trout cover has many forms ranging from undercut banks, fallen trees, midstream boulders and aquatic vegetation to water depth and flow, including a number of manmade fish habitat structures. Trout use cover for security, rest and feeding opportunities. Without adequate cover, naturally reproducing trout populations will not have the balance of year classes or sizes spanning from the young of the year to the old-timers that we all dream about.

Cover is a necessary part of the trout's environment, from its first wiggle to its last. If we are to have high-quality trout streams, we as conservation-minded anglers must be aware of these habitat requirements. We must protect them where they exist and provide them where they don't, because without adequate cover, we will not have maximum angling opportunities.

David F. Houser is chief of the Commission Adopt-a-Stream Section.



in Small Streams

by Nick Sisley



Rruce Inoram

It's widespread and well-known knowledge that the Juniata, Susquehanna and Delaware rivers offer some of the best smallmouth bass fishing anywhere in the world. Because of their popularity, these rivers receive a fair amount of pressure from bass enthusiasts. That's not all bad, but a significant part of fishing pleasure for many is getting off the figurative beaten track.

Trout specialists have been doing this for years. Or at least many try to do this. Few who zero in on the fun of smallmouth bass consider the smaller waters. Yet, many of these streams offer great getaways from the crowd as well as some impressive fishing.

Frankly, I hate to pinpoint small streams where I've had success, because it can be counterproductive. The water you seek for solitude can soon be well-trampled by numerous others. Consequently, if you try my suggestions, tread lightly and return your unharmed bass so they can be caught again. Small-water smallmouth fisheries, I think, can be fragile.

One evening years ago, fishing Conneaut Creek in Erie County, I saw plenty of fish, but they were spooky, often scurrying away from my lure instead of being enticed by it. Overnight I thought about the problem. The next morning I was back in the same place, casting the same water, but this time I was extra careful—both about making noise and keeping my movement as well-hidden as possible. I enjoyed a most productive day. The lesson learned! While a Susquehanna bass 50 feet away might not be spooked by your wading or your

movements, a small stream bass at only 10 feet away is a different, more wary critter.

Little rivers

Tionesta Creek in Forest County can be a good smallmouth producer, especially the lower reaches. Ditto for waters like lower Pine Creek above Waterville, Loyalhanna Creek above Latrobe, the lower reaches of the Driftwood Branch of the Sinnemahoning before it marries with the Bennett Branch, the Raystown Branch of the Juniata before it lazes into the reservoir, the lower reaches of Penns Creek and many others.

But little rivers like Conneaut Creek, French Creek and a myriad of others originate in more level terrain. Somehow these waters are more typified by cut banks, deeper pools, slower runoff and fewer riffles. Some are so small they can't be floated. Only wade fishing will work. We think of smallmouth habitat as bigger water, the lower reaches of major creeks and the major rivers themselves, but many of our small streams offer excellent populations of bronzeback bass. Some of these waters, like French Creek, can be high enough for float-fishing. If you have a favored angling partner, use two cars and try floating for smallmouth on some of the smaller waters far from where you live.

But here's an important tip. It might be okay to float through excellent holding water on the Allegheny or Juniata, then beach the boat and begin casting, but you'll spook bass in the small waters I'm talking about. Instead, beach the boat before you float

through. Then hide your movements and wade as silently as possible as you get into position for casting.

Baits

Smaller baits are also in order for smaller waters. After all, you'll be casting for smaller bass. What is the minnow that bass most favor in the small stream you want to fish? It may take trial and error to find out, but don't discount gentlemanly questioning at bait shops or on the water itself.

Stonecats tend to be excellent, but they're tough to find. Years ago, fishing smallmouth with the late outdoor writer Roger Latham and John Loy of Newport, we spent more time seining minnows than we did fishing. Rog and John would sometimes keep only one or two minnows from a net that might have scooped scores. Yes, they were looking for particular minnow species, the ones that they knew stream bass loved.

Being low man on the totem pole in minnow knowledge, I got only six of the great minnows Rog and John said would work. A second bait bucket was filled with other less-favored minnow species. With the first six I caught five good smallmouth and a four-pound channel cat—with six casts! I fished for hours thereafter using the other minnows, and got only a strike or two.

Learn the difference between minnow species. Be able to identify those that bass can't resist and you're in for some eycpopping success on small smallmouth bass streams.

When waters are low and clear you can find smallmouth every bit as spooky and jittery as a three-pound brown trout. This is when finesse works in your behalf even more than the best bait. While wading or floating you'll often see a bass of worthwhile size in small waters. Once it spooks, your chances of catching it are all but eliminated for that day.

But when you return that afternoon, the next day or another day, chances are excellent that the same bass will be in or very close to the holding water where you spooked it originally. This is the time to be all the more careful with noise, movement, casting, presentation and lure choice. In large rivers there are bass holding areas, but they tend to be immense in comparison to those in smaller streams. You can see the rock, ledge or pool, and almost feel the exact spot where the fish is, where you expect him to strike. I think that adds to the excitement, the mystique.

How you fish, casting across-stream, upstream or downstream, depends on conditions, the type of lurc you're working and how you want to make the presentation. In low, clear water, open-l'ace spinning gear can result in less movement that bass might see than when fly fishing, particularly if you do a lot of false casting. Select little, light lures that you can feather into the water with a minimum of noise and surface fuss.

Sometimes the lure of choice, like a real or fake crawfish or hellgrammite, should be cast upstream, then tumbled naturally into the holding water. With a minnow, little crankbait or streamer, your presentation should be to swing the bait in front of the holding water. That means casting across-stream or quartering downstream. As the minnow or minnow imitation passes through where you think the smallmouth lives, you want the bait to be seen easily by the quarry. To do that, swing the minnow so its full length flashes in front of the fish.

When casting upstream, use the trout fisherman's philosophy of never easting the line or leader over the bass. It's so much more important to do this in small streams like Muddy Creek in York County and Crooked Creck in Armstrong County—compared to the Allegheny or the Delaware. Bass can be extra wary anywhere, but they tend to be particularly so in smaller streams.

Unless you're working a topwater lure, you have to get your small stream bass bait to the bottom, especially if the water isn't clear. Bass are going to be hugging the top of the rocks. Unless you're using a lure that dives to the bottom, like a crankbait,



Bruce Ingram

you'll usually need some lead weight to get your live bait or artificial lure down. However, and this is another key, you must be willing to change weight often. This is because the depth in smaller creeks can change dramatically. A tiny splitshot may be all that's required on a minnow in one riffle, but several larger shot may be essential 10 yards up or downstream.

Remember that if your subsurface offering isn't ticking bottom rocks regularly, your chances of receiving strikes are vastly reduced. The more turbid the water, the more this premise is true.

Small jig

I have caught small-stream smallies on spinnerbaits and plastic worms, plus other lures that are more effective on largemouth bass. However, more often than not, you're stacking the odds against yourself when you select such lures. My favorite is a little jig, probably a smaller one than so many Pennsylvania anglers use on rivers like the Delaware and the Susquehanna.

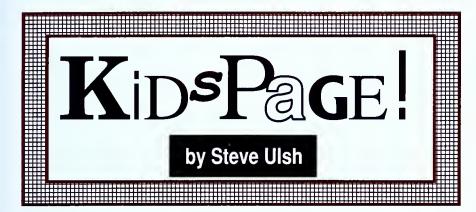
When they first came out, the twisty-tail grub on the jig was deadly, but I think that grub has been replaced in effectiveness by the tube grub, especially the transparent and translucent types with metal flecking. The inside of a tube-type grub also holds fish scent better and longer.

Fish bait upstream and let it tumble to you naturally. Keep it on the bottom. Wade carefully so you don't scare the fish, and remember to cast so that your line doesn't land over a bass.

Other lure favorites arc the tiny, tiny plugs. Several companies are making them of late—puny crawfish, minusculc minnows. There are others. Try them especially in low, clear water.

Joc Hughes, who has a public relations position with a highly successful lure company in Arkansas, has a great idea for lishing little baits in little waters. He suggests scrutinizing maps. What he looks for is where roads, especially roads that are not well-traveled, cross little streams. He and his wife, Lisa, simply get out of the car at every one of these bridges and make a few casts. Often they'll spend only a few minutes, but often they'll catch bass, too. Prime smallmouth holding water is typically around such bridges.

Smallmouth bass provide some of our state's best fishing, no matter where you cast for them. Keep fishing the highly popular bronzeback rivers, but start considering the little streams that are not so highly touted. I bet you'll be both surprised and impressed with what you find.



Walleye (minimum size, 15 inches)

1. Sharp, pointed teeth on lower jaw.

Body brassy, yellow-olive in color not barred.

Large black blotch at posterior base of spinous dorsal fin.

To many anglers, some of the best-tasting fish are members of the perch family—the walleye, sauger and yellow perch. The walleye is the largest of the group, sometimes 10 pounds or more. Trophy sauger and yellow perch exceed two pounds.

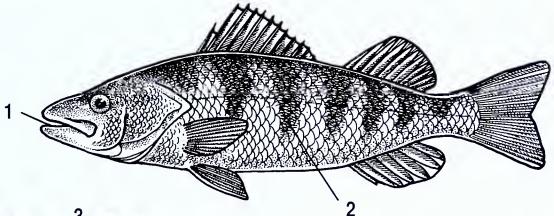
Pick a Perch

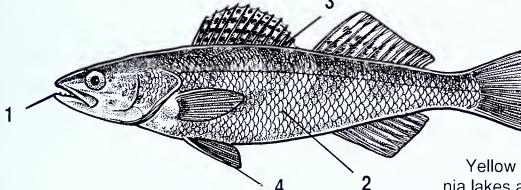
Jigs, live minnows and worms are generally good baits to try. As a rule, cloudy, overcast days are better than when the sun is shining brightly. Many big walleye are caught just before dark.

Yellow perch (no minimum size)

1. No sharp, pointed teeth on lower jaw.

2. Six or more dark vertical bars on yellow body.





Sauger (minimum size, 12 inches)

- 1. Sharp, pointed teeth on lower jaw.
- 2. Body brassy, yellow-olive in color—not barred.
- No dark spot at posterior base of spinous dorsal fin.
- 4. Black spot on pectoral fin.

Yellow perch are found in many Pennsylvania lakes and they're more abundant in the colder, deeper ones. Walleye are found statewide, too. Lake Erie is considered the state's "hotspot" because of its abundant populations. Sauger are less widely distributed, but in recent years more are starting to appear in the Ohio River and its tributaries.

Use these ways to tell the differences among the three.

Setting the HOOK is More than just a Yank

by Andy Cline

An angler's first lesson in properly setting the hook comes when he sticks himself in the finger. Hooks are designed to bite. Every angler knows that putting pressure on a hook once it's in a bass' mouth will somehow eatch the fish. Why this happens is a simple matter of hook design.

The point of a hook is sharp and initiates the bite. The spear of the hook is beveled like a knife to create a cut-and-separate action that keeps the point biting into new territory. The barb prevents the point from passing back through the hole it cut.

At this point, the hook is said to be set. It doesn't matter how fancy your equipment is or how attractive your lure appears. If you don't get the hook buried into the jaws of a bass, you're not going to catch it. Setting the hook properly is more than just a yank on the rod.

Misconception

The first fallacy many anglers believe is that the hook is set when they strike with the rod. Not so. It's not the actual strike that sets the hook. The strike actually starts the process—the act of tightening the line and reeling sets the hook.

A hook is set in the first five seconds after you strike. Watch carefully how the pros handle a fish in the first five seconds after they strike. They reel and pull for the first five to 10 seconds. Weekend anglers often think that the pros are trying to land the fish fast, but they're really setting the hook.

Just as a knife must cut its way into a loaf of bread, a hook must cut its way into a bass. If you try to cut a loaf of bread by striking it with a knife, you'll notice you've made a small cut, but the loaf remains whole. Add pressure to that initial cut and the knife

slices easily through the bread. For this reason, although we all poke ourselves with fish hooks, few of us bury them to the barb. At the first stab of pain we recoil, thus stopping the cutting action.

When you strike at a bass, that action makes the point of the hook bite into the jaws. A few seconds of pressure from the rod makes the hook slice into the jaws up to and over the barb of the hook. At this point the hook is truly set.

Although there are different ways to set the hook on different lures, this principle remains the same. Anglers often believe that a crankbait with two treble hooks automatically catches any fish that strikes. The truth, however, is just the opposite.

Single-hook rigs

Setting the hook with a single-hook bait is easier. With single-hook rigs like a jig or Texas-rigged plastic worm, fish hold the lure for a short time. A bass pins the lure against the roof of its mouth with its tongue and tries to crush it. This gives the angler the moments he needs to set the hook.

Fish don't hold on to crankbaits, either. These lures are hard and the fish quickly spits it out. And a bass can take a crankbait full of trebles into its mouth and spit it out before you know what's happened.

In the film "Bigmouth," a famous documentary about the largemouth bass, Glen Lau photographed a bass chasing a large crankbait. The bass came from behind, sucked the entire lure into its mouth, and then spit the lure out without so much as a nick from the two treble hooks.

Crankbait strategy

Don't assume that the fish will be easily hooked because you're trying to drive in two or three hooks instead of one. The best technique for setting the hook with a crankbait is simply to tighten the line. Pull and crank faster when you feel him strike.

Setting a crankbait with a hearty yank merely pulls the bait away from the bass. The image anglers have of hook-setting with a single-hook lure is a guy leaning into his rod and then whipping backward in a violent motion. This supposedly sets the hook. Speed and agility, however, are much more important to a proper hook set than raw power. Setting the hook is an athletic move, not a tighten-up and power move.

Speed

What you're trying to generate is speed. Speed is more important than power because hooks are designed to cut. Once the hook point bites, all that's needed to complete the cut is pressure. The faster you can get the hook to bite, the faster it can cut its way to a set. Simply whipping back on a rod with all your might puts you off balance. When balance is lost, those important five or 10 seconds after the strike are also lost. And that means the fish is lost. An angler can set the hook too hard easier than he can set the hook too lightly.

Quickness has a lot more to do with a good hook set. Anglers should hold their rods at a 45-degree angle when fishing to make recovery from the strike easier. If you hold your rod too high, you pull the rod back over your head on the strike. It is difficult to keep your balance and reel in line from this position.

Reverse load, push-pull set

When striking, pull the rod upward toward your chest and begin reeling. Two effective striking techniques are the reverse load set



Art Michaels

Striking only starts the process of setting the hook. Tightening the line and reeling actually sets the hook.

and the push-pull set. Both are designed to generate speed rather than power.

With the reverse load sct, the angler throws his rod tip forcefully toward the water, creating a bend in the rod. Then, before the rod can spring back to shape, the angler whips it backward. This reverse load technique creates tremendous speed.

With the push-pull set, the angler pulls back on his rod with one hand while he pushes the butt of the rod forward with the other hand. This push-pull action creates blinding speed in the rod tip.

Both techniques take advantage of the low-stretch properties of modern monofilament linc. When such speed is generated, the line imparts a shock to the fish.

When setting the hook on a fish in or near heavy cover, however, strike lightly. Then move your boat in after the fish rather than trying to reel him to the boat. In this way the fish is less likely to dart for heavy cover.

When to strike

Knowing when to strike is also important to a proper hook-setting technique. When casting plastic worms and jigs, it's okay to try to feel the fish for a moment before setting the hook. You don't want to set the hook with the fish looking at you. It's too easy to pull the lure away from the fish.

Tighten your line just enough to add resistance. This makes the fish turn so that you can then drive the hook into the fish's jaw. One exception: When fishing hard baits that bass will not keep in their mouths for long, such as crankbaits, set the hook as soon as you feel the fish.

To further aid this hook-sctting technique, use light-wire hooks because they cut quickly into the fish, especially when fish are deep and hook-setting becomes difficult because of distance and line stretch.

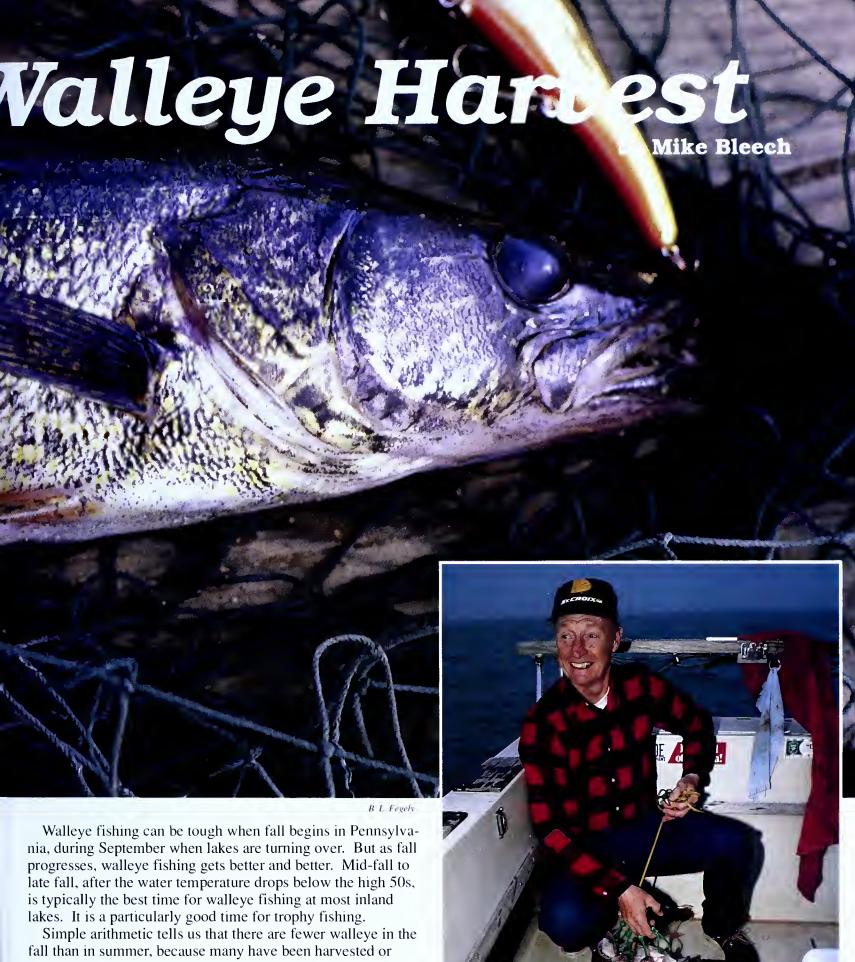
Hooks are designed to cut a hole and then hold themselves in place within that hole. They are not lightning bolts or bullets that strike with force and render a fish helpless. They are surgical tools. The next time you poke yourself with a fish hook, be glad it cannot be driven home with just a yank. But remember, if it cannot be driven into your finger that way, then it can't be driven into a bass that way, either.





really isn't—outdoors.

It had been a balmy mid-autumn day, but when clouds covered the sun it felt cool, and we would zip up our jackets. It was my third or fourth consecutive successful walleye fishing visit to Kinzua, which is what I expect of autumn walleye fishing. It is my favorite time of the year, and I make the best of it by spending all my spare time—and some that



Simple arithmetic tells us that there are fewer walleye in the fall than in summer, because many have been harvested or have died of natural causes since the spring spawn. But summer is the growing season, so many walleye have grown to harvestable size to replace some of those that have been caught.

The advantages of autumn fishing over summer fishing are that the walleye seem to move more, they are easier to find, and there is less natural food—that and the intangibles. The air is brisk, but not yet frigid, and it is fresh. And with winter imminent, the warmth of the sun seems so precious.

Mike Bleech







Tom Fegely



Mike Bleech

Of course, a big part of my love for autumn walleye fishing is that I enjoy much success. Just being on the water is not enough, though. Like any other time of the year, you have to know what you are doing to catch walleye. These are some of my favorite tactics for catching walleye during autumn.

Live minnows in dam tailwaters

Walleye put on the feed bag during fall. You will catch a greater percentage of the larger females at this time, probably because they need the energy for the eggs that are developing within them for the spring spawn. The best example I know of this happens at the Kinzua Dam tailwaters. During summer, most walleye caught there are sub-legal fish. Then about mid-October things change. Mature female walleye start to turn up in the catch. You can recognize them by their swollen sides. This is the time to fish at the tailwaters if you are looking for a wallhanger walleye.

Walleye congregate below dams, and at other identifiable river structure during fall, because they make generally upstream movements. You might even call this a migration, because it is predictable. Check also at the heads and tails of river pools, or where rocky bars tail into relatively deep water.

A very effective way to fish for fall river walleye in any of these situations is with the simple live minnow rig, consisting of a live minnow on a single hook with a splitshot pinched about 18 inches up the line.

I like to use minnows that are at least five inches long and as large as eight inches. My favorite baits are common shiners, stonerollers, creek chubs, and some slender suckers. Emerald shiners and spottail shiners are good baits, and they are often the only baitfish available, but they are not as hardy as the others.

Hook a minnow through both lips, starting at the bottom. This keeps the hook point up as long as the bait is alive, which avoids some bottom debris. I often add a bait floater to get the bait hook a few inches off the bottom. Colored bait floaters also add color attraction, and some hold scent.

I am aware of scents when I fish for walleye. The main objective is to avoid scents that might spook walleye. I wash my hands before handling my terminal rig, and after handling the motor, gas can, battery and other things that could add the wrong odor to my hands. I also add one of the popular walleye scents to my baits and lures, but just a drop at a time. After several years of serious trial, I am convinced that scents help at least to some extent. Just do not expect miracles.

The amount of weight you use can be critical. Sometimes it is best to fish with the bait in place on the bottom. Sometimes it is best to let the bait drift with the current. Sometimes casting and retrieving is the most productive bait presentation. The best approach is to try each of these presentations to see which works best. In most river situations, the bait should be within a few inches of the bottom, but there are exceptions. In

As fall progresses in Pennsylvania, walleye action improves. Mid-fall to late fall, after water temperatures drop below the high 50s, is the best time for walleye fishing in most inland lakes.

any case, use just enough weight to accomplish its purpose. Additional weight is likely to spook walleye by making the bait feel unnaturally heavy.

Big walleye at night

Nearly all big walleye I have caught from rivers or creeks during fall, those over six pounds, were caught at night. Some of the best fishing I had in this situation was while I worked second shift as a fitter-welder in a steel fabrication shop. When I got out of work around midnight, I'd go to the river for anywhere from a half-hour to several hours of fishing. Quite a few anglers fished the river then and for the first few hours after nightfall, but I usually had the water to myself after midnight.

Bucktails, plastic-bodied leadheads

The best time to experiment is while the fishing is hot, and the Kinzua Dam tailwaters was hot during the early 1970s. I did a lot of experimenting during my late-night visits. Minnows were the stand-by. But if the walleye were aggressive enough, I most often preferred jigging with bucktails, and later with plastic-bodied jigs.

Jigging catches aggressive walleye faster than live baiting. It keeps my hands out of the bait bucket, saves money on bait, and I do not have to carry a heavy bait bucket. And I enjoy jigging. I like the intense concentration and finesse. To be good at it you have to get your mind with the jig.

You want your jig to appear like something that walleye are looking for. In the upper Susquehanna River and its branches, and the upper Allegheny and its branches, these baitfish are typically darters and shiners. Lower along these rivers you can add gizzard shad. Leadhead jigs are at their best, at least for fall walleye fishing, when they imitate darters. These bottom-dwellers do not move far off the bottom, making quick but not blazingly fast, short movements. That is how I try to make my jigs appear—by lifting my rod tip slowly to pick the lure off the bottom and either moving it toward me or letting it drift with the current a short way.

My favorite leadhead jigs do not look much like darters, which might not make much sense. The most productive colors have been white, yellow, chartreuse and combinations of these colors with brown, orange or black. I use some bucktails that I tie myself, but it is hard to justify the time and effort when plastic jig bodies are so inexpensive. My favorite plastic body for autumn walleye is the three-inch Mister Twister Meeny.

It is hard to beat a round jighead for versatility, but banana heads are less likely to snag on a rocky bottom. The most useful sizes are 1/8-ounce, 1/4-ounce and 3/8-ounce. Use the smallest size you can keep on the bottom, which is usually 1/8-ounce. About the only reasons for 3/8-ounce heads are wind, or the need for long casts. I like painted heads with large contrasting eyes, too.

Vibrating-wing lures

Jigging with vibrating wing lures such as the Heddon Sonar or Silver Lucky is an even more aggressive approach to aggressive walleye. It is most useful when walleye are feeding on schools of baitfish, such as gizzard shad, shiners, white bass or white perch. Look for the walleye on humps or points. This ploy is hot in places like Pymatuning Reservoir, the Allegheny Reservoir or the lower sections of our larger rivers.

TACKLE FOR AUTUMN WALLEYE

Walleye fishing is a game of feel, so use the most sensitive rod you can find. This usually means a graphite rod, but not all graphite rods are equal, nor does high price necessarily translate into sensitivity. Compare rods by lightly rubbing the tips across a fairly smooth surface, such as a wall or floor, with your eyes closed. You should be able to feel the difference while you hold the rod at the grip.

A seven-foot, fast- to extra-fast-action rod, rated for line in the four-pound to 10-pound range, or for lures in the 1/8-ounce or 1/2-ounce range, is perfect for most river fishing situations when using either live minnows or leadhead jigs. However, I would avoid an extra-fast action if I planned to do a lot of live-bait fishing. You can use a shorter rod when fishing from a boat. With this rod I use an open face spinning reel, filled with eight -pound line.

I like a six-foot or 6 1/2-foot extra-fast-action rod for jigging with vibrating-wing lures. The kind of reel is not important. Line size is less important than with live bait or leadhcads. Still, eight-pound test is a good all-around choice for walleye, though I would not change line if 10-or 12-pound line were already on the reel.—MB

Vibrating-wing lures, which is my name for this kind of lure, consist of a lead body cast onto a sheet-metal wing. The weights of the lures generally vary from 1/8-ounce to 3/4-ounce. Line attaches to the wing, usually by means of a snap. The snap gives the lure the freedom of movement it needs to vibrate. Some lure makers supply snaps with the lures, and some do not. In either case, consider the snap an essential part of the lure.

The stumbling block that holds these lures back from being more popular is that they are somewhat difficult to use.

About 30 years ago, I bought my first Sonar because I figured it could cover the deepest river pools. Money for fishing lures was hard to come by then, so I fished lures close to the bottom, but I did my best to keep them off the rocky, snaggy bottom. I saw and felt the tight wiggle, or vibration, as I pulled it through the water, and retrieved it steadily, and fast enough to keep it just off the bottom. The first time I tried it I caught a 22-pound carp. But after that it did not produce, so I laid it aside.

Twenty years later, I heard about Ohio anglers making great catches of walleye and bass at a nearby New York lake with a lure called the Silver Lucky. This at last was my opportunity to learn how to use this type of lure. I made arrangements to fish with a friend who had learned the method from Ohio anglers, and I was firmly convinced about these lures. In a few hours we caught a half-dozen walleye over four pounds, and we got some big smallmouth bass, too.

This particular method, which is not the only way to use vibrating-wing lures, is a jigging method. Cast the lure and



Jeri Bleech nailed a nice walleye using a live minnow. Keep live-bait rigs simple. A single hook with splitshot attached about 18 inches above the hook is all that's necessary. Hook minnows through both lips from the bottom.

then let it sink to the bottom. These lurcs are some of the casicst to cast. Do not be afraid to make long casts. Sometimes I get my best results at the ends of long casts, though I have never figured out why. Of course, sharp hooks are critical because hook-setting power is low with a lot of line between angler and fish.

With the rod pointed at the lure, reel the line tight. Begin the retrieve by lifting the rod tip. This brings the lure toward you, and lift it off the bottom. At this point you let the lure flutter back down to the bottom. This is when most strikes occur, while the lure is falling!

What makes the method difficult is that strikes occur on a slack line. They are hard to detect. A sensitive rod helps. So docs a sensitive line. But even with the best equipment, strikes are difficult to feel.

Reel in the excess slack while the lurc is falling, starting immediately after you lift the rod tip. But do not recl tight line, which would bring the lure toward you while it should be falling straight down. The lure should fall on slack line.

Walleye fishing is a game of feel. A six- or seven-foot fast- or extra-fast-action rod with eight-pound-test line is a good choice for using live minnows or leadhead jigs.

Timing is a big part of this method. You can feel the lure hit bottom, or you notice that the lure is no longer pulling line, or you have some signal that alerts you that the lure has hit the bottom. This "feel" sets up a rhythm. Whenever the lure does not hit the bottom when it should, set the hook!

If you do this right, many times you might wonder how you are actually detecting the walleye. You will not remember feeling them hit. It seems like you just have to know they are there. This explanation might be vague to novice walleye anglers, but experienced walleye anglers have run into this situation a few times.

This jigging method imitates wounded forage fish falling to the bottom. Many gamefish attack schools of forage by slashing through the schools. In the process they wound more small fish than they actually get into their mouths on the attack. Meanwhile, other fish wait under the schools for the wounded bait.

With the simple live minnow rig, leadhead jigs, and vibrating-wing lures you should be able to take advantage of most fall walleye fishing situations. The live minnow rig catches walleye almost anytime they are feeding. Leadhead jigs, with a bit more effort and finesse, also catch more active walleye, but it is faster than live bait without the bother of carrying and caring for the bait. Then when you encounter a fall walleye feeding frenzy, turn to the vibrating-wing lures for the fastest action. Master these methods and you can get your share of the autumn walleye harvest.

AUTUMN WALLEYE HOTSPOTS

NORTHWEST

(north of I-80 and west of State College):

Kinzua Dam tailwaters*, Allegheny Reservoir *, Allegheny River*, Union City Dam tailwaters, French Creek*, Pymatuning Reservoir spillway, Pymatuning Dam tailwaters, Shenango Reservoir, Tionesta Dam tailwaters, Shenango Dam tailwaters.

Southwest

(south of I-80 and west of State College):

Allegheny River*, Monongahela River, below locks and dams on the Allegheny, Monongahela, and Ohio rivers, Youghiogheny Reservoir*, High Point Lake, Raystown Dam tailwaters.

SOUTHEAST

(south of I-80 and east of State College):

York Haven Dam tailwaters, Safe Harbor Dam tailwaters, Dock Street Dam tailwaters, Blue Marsh Dam tailwaters, Lake Nockamixon Dam tailwaters, Long Arm Dam.

Northeast

(north of I-80 and east of State College)

Susquehanna River* and its tailwaters at the fabridam at Sunbury, Delaware River in the Delaware Water Gap area*, Blanchard Dam tailwaters, Lake Wallenpaupack*, Harveys Lake, Prompton Dam tailwaters.—*MB*

* hotspots for catching trophies



This magnificent walleye whacked a quarter-ounce white bucktail with a three-inch plastic tail (see this issue's front cover).
Remember to make a jig behave as if it were a baitfish that the walleye are after. Try working a jig on the bottom by lifting it and either reeling slowly or letting it drift a short distance in the current.

oe Workosky

Better Bobber Bobber Fishing by Louis Bignami

Purists sneer at bobbers and bait. Some claim "it's too easy to take much skill." Such is often the case when folks drown big minnows under huge bobbers while they read the Sunday paper. Bobbers let you exactly control bait depth. Bobbers float your bait or lures above most snags on the bottom or in rivers where lunkers lurk. Best of all, decent bobbers wiggle and waggle to show you when minnows try to escape or smaller fish mouth other baits when similar bites wouldn't move the overly large floats some use. So you can set the hook fast for a fair fight, and if you like, an easy release.

Unfortunately, few Pennsylvania anglers take full advantage of bobbers. Most use bobbers that are too large, too conspicuous and definitely ill-shaped. The British do it better because they have no "free fishing" for gamefish. Only those who can afford to pay to fish can seek trout or salmon. Instead, anglers take species such as roach, trench, perch or carp. Such fishermen compete in baitfishing tournaments much like the pro bass tour. As a result, their bobber techniques are incredibly refined.

I've used such long, thin English bobbers since 1970. So I find it amusing when this tackle and the techniques it permits are suddenly the hot new method. My experience also demonstrates that bobber basics are easy to learn, but there are plenty of challenges

in learning a more refined method.

I know bobbers work in most situations with many baits. For example, bobbers over wigglers, hellgrammites or worms let beginners follow drifting baits through trout waters. You aren't limited to bait, either. A bobber casts easily three to four feet attached above a tiny spinner, fly or small spoon, and you have the ideal beginner's "no snag" outfit. This excellent system is a killer for river smallmouth, and for most trout or fish that have a case of summer lockjaw and won't take big lures. This rig suits kids who prefer to cast and reel rather than chuck bait and wait.

Best with bait

However, bobbers work best with bait. In streams the proper bobber setup helps you see exactly where your bait drifts—it's always under, and with proper line mending, downstream from the bobber. Bobbers also reduce snagging by floating baits naturally just off the bottom so you can best cover long riffles or circle bait through reversals below.

When I take beginners out to drift bait for big browns in riffles and downstream holes, bobbers rigged so the bait "ticks" bottom every 15 to 30 seconds key action. Bobbers float above the bait, so anglers can easily see if their drift is off line. Bobbers also float bait directly downstream in productive currents

because the bulk of the bobber combats the lateral pull of current on the line that would otherwise pull the bait into slack water.

This basic downstream rig starts with a hook on the end of the line. With live minnows in moving water I normally lip- or tail-hook with a hook sized so that the distance from point to eye is greater than the height of the minnow. In still water I dorsal-hook minnows with a Kahle horizontal or English baithook that helps keep the minnow horizontal.

Soft lead splitshot—water gremlin packs with multiple sizes—work best for me because their "ears" make it easy to reuse shot, and they are soft enough not to weaken line when crimped. I space them evenly over the bobber-to-bait line with the smallest shot nearest the bait for the most natural drift. This rig suits spots where you don't often need to change depth.

Over uneven bottom, rig a single small shot six inches from the bait and the bulk of your shot a foot higher. Add one large shot halfway between bait and bobber to prevent tangles due to the "bolo" effect you suffer with a bobber rigged a long way from the bait. When you want to change depth, this rig makes it easy. Just move the bobber and the anti-tangle shot.

A bobber sized to float the bait needed for the fish sought and the amount of lead required to sink the bait goes on last. A long rod helps cover deeper spots. You can't cast a bobber-to-bait length much more than two feet longer than the rod.

Moving-water bites sometimes submerge the bobber—no doubt about those! More often, larger fish merely halt the bobber drift or move the bobber an inch or two cross-current. Raise your rod and, if you feel a fish, strike to the side to best set your sharp, thin-wire hook.

Stillwater rigs

Stillwater rigs differ. Pinch on most of your shot a foot above the bait, add one large shot halfway between this shot bulk and the bobber, and finish up with a tiny shot two to four inches above the bait so only the bright bobber tip floats when everything is adjusted. The tiny shot near the hook is a "bite indicator." When fish bite lightly they feel only this tiny shot, but you know you're getting a bite because your bobber rises slightly

in the water. It points toward the fish, so set the hook with lateral movement of your rod tip in the direction that the top of the bobber points.

Don't worry about wind, either. Cast out, submerge your rod tip and either hold it underwater or place it in a rod rest so that the top is submerged. Now reel in the slack line until the bobber barely moves. With no line and little bobber in the wind, your bait should stay in place.

Stillwater bites can submerge your bobber. More often they just tilt it to one side or the other or lift it so it lies flat on the water. As a rule, strike at the first movement so you hook fish in the lip.

With live minnows you can tell when gamefish chase your bait by the bobber action. The constant swing and sway of sensitive bobbers also lets you know if the minnow is lively or about to expire.

Bobber choice

In either still or moving water, bobber choice is more critical than most expect. Forget the typical red and white globe bobber! It is both insensitive and fragile. Long, slender bobbers make it much easier to spot bites. In a pinch, even corks split and slid onto your line work better than globe bobbers!

With lures, flies or larger baits such as minnows, solid hollow clear-plastic conical bobbers with screw eyes in each end work well. Either tie the line onto the skinny end and fasten a leader on the fat end or run your line through each eyelet to your terminal tackle and loop rubber bands around the bobber to hold your line in place.

Long, thin red and white plastic bobbers suit smaller baits and waters where shorter casts are needed. However, long quill or balsa bobbers that attach to the line with rubber bands seem more durable. Several mail order firms and a number of shops now sell these.

You can easily make enough bobbers to last for a season while watching one NFL game. Invest a second game painting and you're set. Tiny hardwood dowels, hard balsa and rubber tubing used to attach bobbers are available in model shops. Cut stems from thin hardwood dowel. I drill holes in hard balsa, glue in the stems and then whittle and sand bobber bodies to shape.

I dip the whole bobber in black, olive or brown paint so it won't scare fish. Then set a batch of bobbers in the edge of a corrugated cardboard box so that the tips are even, and drop these tips into



Louis Bignam

white paint. Then, after that dries, I dip them again in bright orange paint so I can spot the bobbers' thin white "bite line" under the orange tip even in dim conditions. Two sizes of long bobbers and one conical hollow plastic bobber handle most conditions.

It's easy to attach long, thin bobbers. Just string inch-long pieces of rubber tubing on the line. In still water, attach the bobber only at the bottom so it stays put in wind. In moving water attach the bobber at the bottom if the wind is downstream so that the bobber stays in the main current. If the wind is upstream or upcurrent, attach the bobber at both ends and spray dry fly flotant on the first 20 feet of line so it floats. This lets the wind hold back the bobber so the bait gets there first. I string on extra tube sections that slide up and down the line when not attached to floats.

Hooks

To complete your bobber rig you need sharp light-wire hooks small enough to hide in live bait such as crayfish, worms, minnows and other baits that attract fish through movement as well as taste and scent. Light wire provides a more natural action. I buy hooks in fly fishing shops.

You will find a longer rod helpful here because the limiting factor with most bobbers is water no deeper than your rod length plus a foot or two. Fortunately, most fish are caught in water less than 10 feet deep. Noodle rods work well. So do fly rods with spincast reels. If you don't own a long rod you can still fish deeper water with sliding bobbers.

Once you are properly rigged you need only find a good spot near the edge of submerged cover or at an inlet stream on a lake, or on a rocky riffle or slow run on a river or stream. Adjust the bobber-to-bait distance so that the bait floats near the bottom—the bobber will sit over on its side if the splitshot rest on the bottom, so you can shorten this up. Watch your bobber closely. You can expect to catch more fish than ever before.



A Chilly

by Cheryl Kimerline Hornung

The sun crept over the horizon. Its rays peeked through the early morning fog that settled on the water. The fog was just starting to lift. It was a beautiful fall morning. The air was

cool and crisp. The leaves on the trees were wearing their Indian colors. The sorrowful music of a mourning dove sounded throughout the valley. The river gurgled as it ambled downstream. You were the only one at the ramp, planning to enjoy a quiet day on the water. What a difference from last weekend! You could not even find a parking place at the ramp.

You slid your boat off the back of your truck and unloaded your fishing gear. Today's air seemed chilly, but you were already breaking a sweat. You just removed your nylon wind breaker. You hoped the day was not going to be a scorcher because you had worn too many layers of clothing. The early morning temperature was in the 40s, but it was supposed to warm to 60 degrees. A picture-perfect fishing day! What was that saying...."Even a bad

day fishing is better

than a day at the office"? You chuckled as you thought of how glad you were to have taken the day off from work.

As you pushed the boat off the rocky river bottom, a trickle of water slid down your boot and a cold shiver ran up your spine. *Brrrrr*... That water was colder than it looked! Suddenly you were glad you were wearing several layers of

clothing and your life jacket/fishing vest.

Heading to your favorite fishing hole, you passed a lone shore fisherman. Moving farther upstream, there was no one



in sight. This is what you had anticipated. You found your lucky spot and slowly lowered the anchor off the bow. The anchor bumped along the bottom until it finally caught. You got your gear situated and you were ready to fish. With your first cast, the pressures from work and home slipped away. You were soon daydreaming about the record-breaking catches of

Misadventure

photos by Dan Martin

the day. You were enjoying the solitude and watching the kingfishers dive for fish. Then suddenly you felt it—a strike!

The smallmouth danced across the water. Working him toward your boat, you leaned upstream to pull him in. Suddenly a rush of cold water filled your boat. You gasped with that sudden shock of cold water. It was just like accidentally hitting the cold water instead of the hot water in the shower. You were just glad your face had not gone underwater or you would have breathed in water with that gasp instead of air. You felt yourself starting to panic as the cold began numbing your body. What was going to happen next? How were you going to get back to shore? Suddenly minutes seemed like hours.



Cold shock

What happens to the body as it hits cold water? That initial shock of cold water can place such a severe strain on the body that a heart attack can occur. Panic and disorientation set in. Persons have reported thrashing helplessly in the water for 30 seconds or more until they were able to get their bearings.

Most people drown 10 feet from safety, whether it's a floating capsized boat, a dock or the shore. People panic and try to swim to shore, ignoring floating objects such as their boats, coolers and tackle boxes. Holding onto these buoyant objects could save their lives.

Few people who try to swim to shore after a boating accident make it. Swimming for shore should be the last resort only if no other means of survival are at hand, and if you must escape more immediate danger.

Hypothermia, exposure

Hypothermia is an illness caused by the body's core (or inner) temperature lowering below normal (98.6 degrees). Hypothermia means that the body loses heat faster than it produces it. It can occur on land during exposure to cold and windy weather or through immersion in cold water (less than 70 degrees). However, the greatest danger to fishermen is from cold water.



Few boating accident victims who try to swim to shore make it. Holding onto a buoyant object—cooler, tackle box or the boat itself—could save their lives.

Signs of hypothermia

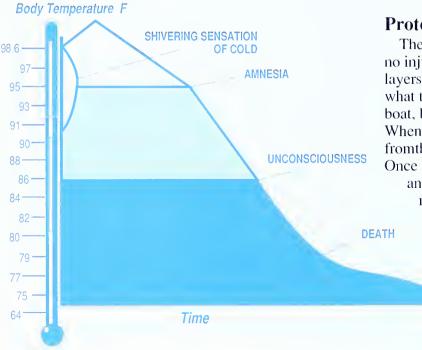
The effects and symptoms of hypothermia vary with water temperature, length of exposure, age, amount of body fat, wind speed and air temperature. The colder the water and the longer the rate of immersion, the more severe are the effects of hypothermia. Youngsters lose heat faster than adults. Thin people lose heat faster than heavy people. A person swimming loses heat faster than someone floating. Alcohol dilates blood vessels, causing an intoxicated victim to lose heat fast. Food is the fuel on which the body operates. A full stomach provides energy to fend off hypothermia.

Shivering is one of the first indicators of hypothermia. It is the uncontrolled rhythmic contraction and relaxation of the skeletal muscles. It is the body's attempt to warm itself. It may lead to muscle spasms and loss of the use of the arms and legs. If the body temperature continues to drop, shivering continues.

In the next stage of hypothermia, the person is still conscious and alert but he starts to feel a loss of dexterity in the fingers and toes. Cold water can quickly numb the extremities to the point of uselessness. Cold hands cannot fasten the straps of a life jacket, grasp a thrown rescue line or hold onto an overturned boat. Shivering ranges from mild to severe. Pain and numbness occur.

The body's temperature still drops. Shivering intensifies. Movements are slowed and labored. Mental faculty clouds. The body gives one last violent shiver before it slides into lifethreatening hypothermia. The muscles are rigid. The exposed skin is puffy and blue. Muscle coordination is poor. Walking is impossible. Actions are confused, incoherent and irrational.

If untreated, death can occur. Pulse and breathing continue to decrease. The pupils dilate and react poorly to sunlight. Muscles are very rigid and a semiconscious stupor sets in. The body temperature has dropped below 80 degrees and the final stages of hypothermia set in. The heart beat is barely detectable. Pupils are fixed and dilated. Cardiac and respiratory centers fail. Death occurs.





This hunter is wearing a camo float coat, a life jacket that looks like a winter coat. It offers the best protection against hypothermia.

Rescue

If you rescue someone who has been in cold water for any length of time, remember these key points. If the victim is in cold water, use a safe rescue technique to avoid becoming a victim yourself. Reach or throw something out to him. Encourage the victim to help himself. Never swim out and attempt the rescue yourself, unless you are a trained lifeguard. Try to get the victim out of the water as soon as possible. Get him to a warm shelter and out of any wind and rain.

Replace the victim's wet clothing with dry clothing. Wrap the victim in a sleeping bag or blankets and keep him warm. Handle the hypothermic victim gently. Do not allow him to walk unless absolutely necessary.

Transport him to a hospital as soon as possible.

Protect yourself

The angler in the earlier scenario was prepared and suffered no injury other than bruised pride. He had dressed in several layers of warm clothing, had donned a life jacket and knew what to do in an emergency. He climbed back in his swamped boat, bailed some of the water and slowly rowed to shore. When reaching shore, he emptied the remaining water fromtheboat and headed back downstream toward his truck. Once to shore, he changed clothes, drank some hot chocolate and sat in the truck for a while with his vehicle heater running. When he felt better, he loaded the boat and fishing equipment to head for home.

A life jacket is as important to an angler as a favorite fishing rod. For a life jacket to protect you, it must be worn. It must be U.S. Coast Guard approved and in good condition, and it must fit.

A PFD increases survival time in cold water for two reasons. It keeps you afloat in water and it gives your body added protection from hypothermia. A Type III personal

flotation device, especially the float coat, is the best protection against hypothermia. Float coats are life jackets that look like winter coats. They are used by many cold-weather sportsmen.

Life jackets that look like your favorite fishing vest are also available. They are available with pockets and come in most colors including tan, green and camouflage. Remember that a bright color helps you be seen if you have to be rescued in cold water.

Staying with your boat is vitally important. The more of your body you can get out of the water, the better off you are. Cold water robs the body's heat 20 times faster than cold air. If you fall into cold water, get out as quickly as possible. In Pennsylvania, over 90 percent of reported boating accidents occur in small boats, mainly canoes, rowboats and low-powered motorboats. If possible, right your small boat, reenter it and bail the water. Most boats filled with water can support the weight of their occupants. If the boat has capsized and cannot be righted, climb on top of it.

Physical exercise such as swimming causes the body to lose heat at a much faster rate than remaining still in the water. Blood is pumped to the extremities and quickly cooled. Swimming increases heat loss and can shorten survival time by more than 50 percent. If you cannot get out of cold water, adopt a defensive position to conserve your body heat.

If you are wearing a life jacket and you are alone, adopt the Heat Escape Lessening Posture (H.E.L.P.). This position requires the victim to curl up in a fetal position to decrease the exposed surface area. The major heat loss areas are the head, armpits and groin. Keep your head out of the water because 50 percent of your body heat is lost there. Wear a hat to prevent further heat loss. Draw your legs up tightly to your chest and cross them to protect your groin from heat loss. Keep your arms tight against your sides (to protect your armpits) and cross your hands on your chest.

If there are two or more persons present, adopt the Huddle position (similar to a football huddle). Form a tight-knit group. Put your arms around the person next to you. Keep close together to protect your sides and armpits. Keep your legs in a tight circle. This traps warm water in the center of the circle. The H.E.L.P. and huddle positions do not work in water with a significant current.

Moving water

In moving water, assume the self-rescue position. This position involves wearing a personal flotation device and lying on your back with your feet pointed downstream. Fend off rocks and obstacles with your feet. Angle yourself toward shore and use a backstroke to paddle yourself to calm and non-threatening water.

Never try to stand in moving water. Your feet may become trapped between rocks and debris, pinning you underwater. Work your way to shore or to the nearest rock to pull yourself completely out of the water to prevent further heat loss.

Preventing hypothermia

Anglers should dress not only for the air temperature, but also for the water temperature. The day may be warm and sunny, but the water temperature is cold. Instead of wearing one big, bulky jacket, wear several layers of warm clothing. These layers trap air and can help you stay afloat. Layers also trap water and warm it next to your skin, acting as a wetsuit.

Layers can also be added or removed throughout the day as you get warm or cold.

Although cotton has been a mainstay of fabric construction since ancient times, it is a poor article of clothing to wear when on the water. Cotton is a poor insulator even when damp. Cotton allows heat to be conducted through it, even when dry, at a rate three times faster than wool, nylon, polyester and acrylic fibers.

Wool is one of the best insulating materials available. It has been a common ingredient in outdoor clothing for years. Wool clothing is made with a thick, tight weave that insulates well. It suspends water vapor while retaining its insulating ability. Wool fabrics are moderately priced and wear-resistant, and are generally heavier than today's synthetics.

The synthetics, nylon, polyester and acrylic, evaporate water quickly and are close to wool in insulation ability. However, they feel wet when damp. Nylon can be coated with a finish to make rainproof and windproof garments, or it can breathe without coatings. It is durable, relatively inexpensive and available in a variety of different weights for different uses.

Olefin or polypropylene is valuable in the construction of long underwear. It has almost twice the thermal insulation ability of wool. This fabric has a high wicking ability that lets it remove moisture from the skin and transfer it to outer garments. It evaporates rapidly and doesn't feel damp.

Polyester pile garments do not absorb water easily. They stay relatively dry and retain their insulating ability even if damp. These garments are relatively expensive.

Be prepared

Fall is the perfect time to go fishing and boating. The leaves are colorful, the air is crisp and the crowds are sparse. Fishing with no one around is everyone's dream experience. But if you get into trouble, who would be there to rescue you? Make sure your boat and equipment is in first class condition and you know what to do in an emergency.

Always wear a personal flotation device when boating on cold water. It could save your life. It is almost impossible to don a PFD in cold water.

Check the weather forecast before planning your trip. Make sure no storms are expected in the area. If boating on a river, make sure the water is at a safe level.

Always tell someone where you are going and when you expect to return. Take several boats along on the trip. Know what to do in an emergency. Practice capsizing and righting your small boat in the summer when the water is warmest.

Remember to dress properly for the cold. Several layers of light clothing provide better protection than a single heavy layer.

If you find yourself in the water, don't panic. Air trapped in your clothing can provide buoyancy as long as you remain still in the water.

Know the dangers of cold water and prepare yourself accordingly.



Cheryl Kimerline Hornung is a Commission boating education specialist. She is the winner of the 1989 Captain Fred E. Lawton Boating Safety Award, sponsored by Raytheon Company.

ANGLERS CURRENTS

Employee Honor Roll

Congratulations to the following Fish Commission employees who in 1990 have served the Commission continually from 10 to 25 years. The names of employees serving longer appear in the January 1990 and October 1989 Anglers.

25 Years of Service

James C. Anthony Michael Badner James R. Beatty Ronald L. Bixler H. P. Duvall Iral T. Feighner Ray R. Stichler

24 Years of Service

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23 Years of Service

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ANGLERS CURRENTS

Ralph W. Abele Memorial Glen

At its 193rd meeting last July the Fish Commission honored the memory of former Commission Executive Director the late Ralph W. Abele by renaming the entire Penn's Creek project the Ralph W. Abele Memorial Glen.

The Penn's Creek project, surrounded by flora and fauna, is located in Mifflin and Juniata counties. It includes more than three miles of a nationally recognized wild trout fishery. This property's acquisition was one of Abele's proudest accomplishments.

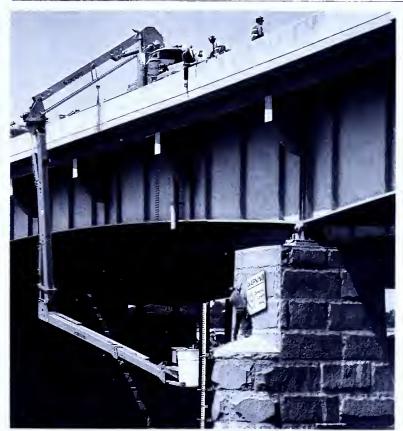
The Commission also voted to establish the "Ralph W. Abele Conservation and Heritage Award" to recognize outstanding individual achievment in protecting, conserving and enhancing Pennsylvania's resources.



Linda Steiner won Third Place honors in the highly competitive Outdoor Writers Association of America (OWAA) Take Pride in America Contest, Magazine Category. Her prize-winning entry was the article "Manmade Marshes: Growing Hope for Pollution Woes," which appeared in the July 1989 Pennsylvania Angler. Steiner won a plaque and \$200. OWAA officials announced the names of the winners at the 63rd annual OWAA conference in Salt Lake City last June. The contest was sponsored by OWAA and Chevron USA, Inc.



Fish Commission Media Relations Chief Dave Wolf won the Pennsylvania Outdoor Writers Association (POWA) "Best Published Column 1989" for his column "The Christmas Card," which appeared in the December 1989 Pennsylvania Angler. POWA and the Coleman Company, the award's sponsor, honored Wolf last May at its spring conference in Allentown with \$150 and a plaque.



A PennDOT crew puts the finishing touches on the last of 17 warning signs on the I-83 bridge just south of the Susquehanna River's Dock Street Dam in Harrisburg. The signs warn boaters of the dangerous currents ahead in the backwash below the dam. This year, four fishermen lost their lives by approaching the dam from the downstream side.

Anglers Currents



The Commission's 1990 boating safety billboard highlights the lifesaving advantage of wearing a life jacket. The Pennsylvania Outdoor Advertisers Association donated 100 statewide locations, most of which were in high-traffic places. Tom Buckwalter and Glenn Schlosser of Whiteco Metrocom, Inc., were instrumental in making this effort a success.

Angler's Notebook by C. Boyd Pfeiffer

To avoid rewrapping the guides on your rod, check for wear of the epoxy coating. Protect wraps by adding a new coat of rod wrap epoxy. Wraps will last for many years if they are not nicked or frayed.

If you have no bait, or if you run out of bait, cut belly strips from fish that you have caught. Belly strips from any fish can be cut into small chunks or thin strips that resemble minnows and leeches.

For a different fly rod approach with dry flies, use a long rod and a long leader to skate or bounce flies along the surface. Hold the rod high for this technique. Try it in riffles and large pools.

One way to free a snagged lure when fishing in a fast-moving stream is to release line to form a belly in the current. In many cases, this will pull the line against the belly, pulling the lure off the snag.

Before you store your boat this winter, check the hull near the bow for damage from beachings and banging on docks. If this hidden damage is severe enough, you'll want to get it repaired when you winterize the boat.

Metal ammunition boxes, or the new plastic equivalents, are waterproof and ideal for carrying expensive camera equipment in the field. Line the boxes with camera case foam to protect equipment. To further protect camera gear from heat, paint the boxes white.

To land a fish correctly with a landing net, sink the net underwater and lead the fish into the net head-first. That way, if the fish lunges, it will swim into the net, not out of it, as it might if you tried to land the fish tail-first. Use rod holders in your boat to store rods and to protect them. A rod constantly rattling against a sharp seat, for example, can crack or break months later.

Do not run john boats straight into heavy waves or swells, because the square prow is not designed for this type of water. Instead, run at an angle to ride over such waves.

Does your depthsounder show unusual readings? Transducers can pick up dirt from long or frequent trailering trips. With warm water and mild soap, wash the transducer bottom to ensure that your soundings are as accurate as possible.

Walleye arc light-sensitive. Work your lures so that they swim parallel to and very close to the edges of shadows on bridge abutments and shorelines. In this way, you can entice the walleye that lurk in the darker areas.

Quiet down to catch more fish. Don't bang your anchor on the side of your boat, and oil oar hinges so that they work silently.

Anadromous and catadromous fish are found in Pennsylvania waters. Anadromous fish, such as American shad, live in saltwater and spawn in freshwater. Catadromous species, like American eels, live in freshwater and spawn in saltwater.

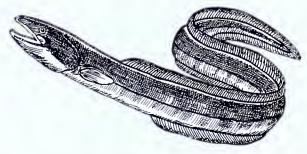


illustration- Rose Boegli



Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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On the Water

with Dave Wolf

From the time I left Harrisburg until I reached the motel on the outskirts of Erie, the weather had changed from sunshine to rain and sleet. The temperature had dropped from the high 50s into the mid-30s, and I was happy I had thrown my goose down jacket into the jeep as an afterthought.

Morning did little to improve things. Although the temperature had risen into the 40s, it was still raining hard and the rain was driven by strong winds. You come to expect this in Erie; weather is never predictable and ever changing. I would not want to be a weather forecaster here because it seems to be nothing more than a guessing game. I doubt if modern technology will ever be refined enough to predict Erie's weather.

I arrived at the Fish Commission's Fairview hatchery to photograph the taking of eggs from coho that had been moving up Trout Run sporadically for weeks. The area food bank was on hand to take the salmon that would be sacrificed for eggs as the Commission prepared to rear another generation of coho. As we netted coho from the holding tank I could not help but be impressed with the number of steelhead in and below the tank. They were strong, sleek fish, fresh from the lake, larger and stronger than the fish of inland waters, and I longed to tangle with one. But for now, despite the fact that my camera's light meter would not register enough light for photos, I tried to complete my assignment. Inside the hatchery, I soon found out that the coho were not ready to spawn. Their eggs were still green and not ripe, so we would have to wait for another day.

I drove over the windy hardtop, which was littered with leaves from a driving wind and oil-black from the rain that persisted to fall, to Walnut Creek. The thoughts of steelhead still in my mind, I pulled off the road and found a likely looking pool not cluttered with anglers. I had been told by friends that the steelhead runs were increasing annually and that the locals were keeping a cap on it. They would prefer to keep it a secret and besides, tourists like me prefer more civil weather and are not interested in numbing their fingers and toes in hopes of catching a large rainbow or two.

I had called the local steelhead expert before my trip to find out what flies I should tie for the trip and where we would get together the following day for some fishing and photos. He had told me then that the steelhead were not in, and that we would need rain and colder weather to trigger the first run of the fall. I was secretly hoping that this was the rain that would bring the fish from the lake as I cast into the milky waters that were rising quickly.

Casting weighted flies, too colorful for any other fish I know of, into the milky waters that were only two to three feet deep seemed a little absurd. After all, these were large fish. Surely if they were holding in this small pocket of water I was fishing I would see fish. The line stopped and I swept the rod skyward.

I wasn't prepared for the weight and power of the fish that ran and leaped into the pool above me. I tried to turn it, but with a six-pound tippet there was little I could do. The fish was in charge now, and I could only be patient and hope that in time it would

Fall Steelhead



Dave Wolf

tire. The fish sped by me and downstream, not a good place for a fish to be, below me. Now fighting the fish and the current, I moved downstream to be in a better position to continue the fight and it responded by moving through the small pools above me.

I was impressed with its strength and determination as I waded out into the waters to give myself a better position. After a long and hard fight, I was able to land it on the far shore. This fish was brilliantly colored with a mouth as hard as a rock—a fish fresh and strong from the lake, moving upstream to some unknown destination before I interrupted it.

The 7 1/2-pounder was a good fish, and was not to be the last of the day. A seven- and an eight-pounder also fell for my colorful flies as did a half-dozen others, a mixture of coho and steelhcad that where in the six- to seven-pound range. The largest, of course, got away. When I set the hook it leaped into the larger pool above me. My line became entangled in a grapevine and as I bent to loosen it the fish was jumping a good 100 yards above me, the fly hanging from the corner of its mouth and my leader lying limp in the current.

As the rains continued and darkness descended, I left the stream tired and with aching arms. It was not a typical day, for steel-head come in waves and they are here one day and gone the next; but their runs are growing and I smiled as I climbed into my jeep and looked back to the stream.

It is amazing how far we have progressed here at Eric. Where else could one tangle with nine fish, all over five pounds, on a rain-filled afternoon? And although there will be fishless days, the Great Lake is nurturing fish that most of us only dream of.

The Pennsylvania Fish Commission is 125 years old in 1991!

On March 30, 1866, Governor Andrew Curtin signed an act that provided for the first Commissioner of Fisheries to look into restoring "runs of migratory fishes to the Susquehanna River." Such was the beginning of the Pennsylvania Fish Commission.

To celebrate our 125th birthday, the Fish Commission is offering an Anniversary Calendar, which traces the history of the Commission and provides current information for fishing and boating the Commonwealth in 1991.

This four-color, high-quality calendar has interesting historical tidbits; fishing and boating tips; natural history notes on fish, amphibians and reptiles; beautiful photos of Pennsylvania scenes and pictures from the past; important dates for season openings and other information you can use throughout the year.

You pay only \$5 for this beautiful calendar. Use it at home or at the office or give it as a gift to your favorite angler or boater.

Order near by anding \$5 per a

Order now by sending \$5 per calendar to: Pennsylvania Fish Commission Calendar, P.O. Box 1673, Harrisburg, PA 17105-1673.

Please use a check or money order made payable to Pennsylvania Fish Commission.



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Straight Talk



KARE and Your Resource Dollars



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

As the dog days of summer turn shorter and the cool, fall evenings rekindle thoughts of school, football and apple cider, many people think back to the fun and adventure of the previous summer. Somehow the free-wheeling days of summer always turn into the more structured days of school and work. After the first few weeks of school, most students would rather be out enjoying their environment than studying about it.

This year, and in the school years to come, they may be able to do both. The environmental education movement and the training of teachers in environmental education has begun to take important strides toward making formal education a more meaningful experience.

The environmental problems that affect lives on a daily basis offer all educators the opportunity to make their disciplines more meaningful to their students. Whether it involves reading the instructions on a recycling pamphlet, studying the political history of resource management or analyzing the results of a pond experiment, environmental education is a very important part of today's school curriculum.

The Fish Commission has an active role in the environmental education effort because several years ago it initiated a comprehensive aquatic resource education program called the Keystone Aquatic Resource Education (KARE) program. In June, members of our staff and I attended a conference in Washington, DC, and received a national award from the American League of Anglers and Boaters for the best aquatic resource education program in the United States. Because the KARE program was competing with some long-standing programs from 50 other states, it was a special honor for us to accept the award on behalf of the Fish Commission and the anglers and boaters of Pennsylvania.

The KARE program is designed to reach thousands of teachers and tens-of-thousands of school children and adults in the next decade. Our education staff and volunteers are doing an excellent job with the program and deserve congratulations. The anglers and boaters of Pennsylvania deserve much credit for supporting these programs with license dollars, boat registration fees and the excise taxes paid on fishing equipment and motorboats.

The Fish Commission does not receive general tax revenues from the state treasury, so it must rely on license sales, boat registrations and fees paid by the resource user to support the Commonwealth's fishing and boating programs. The user-fee portion of the Commission's funding has been around for 40 years as funds generated by the 1950 federal Sport Fish Restoration Act (D-J Act), which established an excise tax on fishing equipment. The D-J Act is administered by the U.S Fish and Wildlife Service, and returns money to state fishery resource programs on a 75/25 percent matching basis.

In Pennsylvania, the Fish Commission has been able to accomplish, sustain and initiate numerous programs with this funding. The KARE program is one. Others include the acquisition, development and maintenance of lakes and access areas, survey and inventory of Pennsylvania's fishery resources, research projects related to fish genetics, disease and culture, and raising fingerling salmon, walleye, bass and other species.

The act specifically prohibits using the funds for law enforcement activities and raising and stocking adult fish, but most other Commission programs involve federal funds to some degree. The level of funding available to the Commission from the original 1950 act reached about one million dollars in the mid-1980s and made up five percent of the Commission's overall revenue.

In 1984, the Wallop-Breaux amendment to the original act was passed by Congress, and the tax base of the fund was expanded by including an excise tax on imported fishing equipment, pleasure boats and yachts, and on new types of fishing equipment like depthfinders. The amendment also required states to transfer federal liquid fuels tax money to the fund.

This expanded funding base increased the annual allotment available to the Fish Commission, and the funds now make up about 15 percent of the Commission's annual revenue.

The KARE program is the latest example of how the Commission has successfully used these funds to support worthwhile programs. Thanks to the anglers and power-boaters in Pennsylvania, the fishing and boating resources of the state continue to benefit.

As you enjoy the Commission's boating and fishing programs and receive benefits from all Fish Commission programs, look for the sport fish restoration symbol. It indicates to you where and how your resource dollars are being spent.

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The covers

This issue's cover, photographed by Joe McDonald, shows *Terrapene c. carolina*, an eastern box turtle. You can examine this common Keystone State creature by reading the article beginning on page 23. In Pennsylvania this turtle begins its hibernation about now, but don't begin your angling hibernation for the season yet! Instead, soak up the late-season fishing ideas on page 21, and hook into a great fly tying idea on page 12. If you're a boating angler, catch the lowdown beginning on page 16. And don't let cabin fever cramp your style. Read the good news on page 4.

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Start Now to Smash Winter's Grip

by Jonathan Angharad



I smash winter's grip "officially" each spring by launching my boat on the Delaware for the shad run. Deeply I breathe the cool, crisp, fresh air. I fire up my outboard, and after a brief warm-up, I throttle up toward a hotspot for that first exhilarating boat trip of the season. Then, and only then, is winter really over.

In recent years, though, I've discovered a remedy for my cabin fever that works months before the shad arrive. There's plenty to do during the winter to get my boat ready for spring, so I start these chores now, as I end the season. I think of the chores as a spring make-ready that I begin sometime in November or December.

The work focuses on matters of safety afloat and fishing efficiency, and the preparation for next season lasts long enough to get me happily through the longest, coldest, snowiest winters. By the time I've completed the chores, it's time to refloat the boat and start fishing again.

Accounting

When I prepare my boat for its winter rest, I place all my accessories in three plastic crates and tote them indoors. There I take an accounting of all the equipment. I put aside items that need to be replaced and I clean everything. This most often means wiping down the PFDs (personal flotation devices) with a damp cloth and washing away fish pieces, bait, scales, food and dried aquatic vegetation.

Items of fishing tackle that are just plain out of place get put back where they belong. Tackle borrowed from friends is returned.

I take my electronics off the boat, wipe away the mud, dirt, bait and fish scales, and place each item in its original box for the winter. I store my boat outdoors, so I spray the electronics connections liberally with WD-40. Then I wrap each wire end loosely in a small, plastic Zip-Loc bag and seal it loosely with a rubber band.

photos by the author

Check your boat battery now and then this winter with a hydrometer. If the hydrometer indicates that the battery energy is less than 60 percent, recharge the battery.

The loose fit protects the wires from snow and rain but allows moisture to evaporate. I've never gotten condensation inside the plastic bags, and the WD-40 prevents corrosion.

You may want to ask your electronics dealer what he recommends for winter storage procedures. This information is important because if your gear is new and still under warranty, you could void the guarantee if you service the equipment in a way not recommended by the manufacturer. You will likely find maintenance information in the owner's manual, if you still have it.

Before you put your boat to sleep for the winter, your safety and efficiency depend on maintaining the boat, motor, trailer and all your boating equipment. Let the chores help you overcome cabin fever.

Outboard, trailer

My primary preparation for winter is to take my trailer to the dealer for a once-over. The dealer winterizes my outboard. He replaces the spark plugs, adds gas saver to my portable tanks, drains and refills the lower unit lubricant, and performs other engine maintenance he deems necessary.

In addition to the usual maintenance, the dealer fogs the engine. While the motor runs, he sprays a heavy fogging oil into the carburetor. This oil circulates throughout the engine, and when the oil saturates the motor, the engine quits.

The fogging oil coats the internal metal parts so that they don't rust during the winter. A fogged engine will likely run smoky for a few minutes when it's first kicked on in spring. But the smoke soon disappears and you hear the hum and smoothness of a well-maintained engine. That feeling is heartening after a long winter.

Trailer, hubs

Then the dealer inspects the trailer wheel hubs. Just about every year he replaces the bearings, rings and seals, and adds fresh grease.

My dealer also lubes the trailer rollers and roller arms. He inspects the entire trailer to make sure no problems have arisen since last year. This examination includes checking the trailer's overall integrity, inspecting for rust and corrosion of the frame members, and going over the winch and wiring.

If your trailer has bunks instead of rollers, ask the dealer to check the bunks and the carpeting. Torn carpeting should be replaced, and

carpeting coming off the bunks should be repaired.

When I get the rig back from him in January, it's ready to go in spring. He's



grateful that I bring the rig to him in late fall, not two weeks before the shad run begins. The rule at most dealerships is this: Bring it late, get it back late; bring it early, get it back early.

Leaf springs

For many years I stored my boat in a garage. During those winters I never removed the wheels from the boat trailer, but I did prop up the trailer on cinder blocks. This takes the weight off

Give your trailer's leaf springs (arrows) a break this winter by propping up the trailer on cinder blocks. This takes the weight off the springs so they don't flatten prematurely.

the trailer leaf springs so that they don't flatten. The constant weight of your rig on the trailer weakens the springs. Lightening that load during long periods of inactivity keeps your trailer springs in top shape for the longest time.

Taking the load off your trailer's leaf springs keeps them, well, "springy." As you travel on the highway, springs in good shape take the brunt of the road's bumps. Weakened, flattened springs transfer the bruises, jars and jolts of the

road to your boat, motor, electronics and other gear.

Thus, if you don't take care of your trailer's springs, the damage may show sooner or later in your outboard engine breaking down, electronics malfunctioning, or hull cracking. Let your dealer check out the trailer springs when you winterize your rig.

Don't forget to pull the drain plug for the winter and bring it indoors. Get a new one if the fit isn't tight. I stash mine and two spares in the plastic crates with my other gear.

The battery goes to sleep for the winter in my basement. I charge it usually

twice between December and April. I use a hydrometer to measure the percent of charge in the battery. If it dips below about 60 percent, I charge it.



Check the expiration date (circle) on your flares. If your flares are outdated, buy new ones with expiration dates far in the future. Don't discard the old flares because they'll probably still work. They just can't count toward the legal requirement.

Safety equipment

This year my flares will be outdated. I won't toss them because they're probably still good. They just no longer count toward the legal requirement. Sometime in December I'll buy new flares with expiration dates well in the future.

Other safety equipment gets a going over, too. PFDs must be in good, serviceable condition to count toward the legal requirement. This means that they can't be ripped or have missing or torn parts. If my inspection reveals these problems, I buy new ones at the local marine supply house, through mail order firms, or at wintertime sport shows.

Now is a good time to read marine supply mail order catalogs because items like PFDs often go on sale.

I also inspect my dock lines and anchor rode (chain, rope and connecting hardware). I replace frayed lines. I look over my gunwale tie-down, too. If it's worn, I get a new one. I usually manage to wear out gunwale tie-downs every six or seven years.

Similarly, I unwind the winch rope completely and inspect it. If it's frayed, I replace it.

Do not fudge on this item. If your winch rope or cable is frayed, get a new one.

I remove from the boat terminal tackle and other small items that I tossed carelessly aside during hot action last summer. This assortment includes rusted hooks, corroded swivels and snaps, and other unrecognizable small items. I discard all of them.

During the winter I also look over my

fishing tackle. I make a list of everything that needs replacing or replenishing. Then when the list is complete, I make trips to the tackle shop to replace these things.

I also stalk the sport show isles in search of bargains on items I need to replace. I usually bring a list with me.

I inspect the boat when everything is removed. I walk on the deck to check for soft spots, which could tell me that the deck is rotting. I look over the hull, especially checking the bow area. Those unexpected beachings and dock bashings can take their toll.

I give all the hardware a look, too. Water is tough on hardware, and items need to be replaced faster than you might think. This inspection includes antenna mounts, antennas, cleats, chocks, lights and all screws, bolts, clips and fittings.

Tinkering

This winter I plan to add no new equipment to my boat or to modify the boat itself. But winter is a good time to let your dealer perform this work if you have any modifications or additions in mind.

Onc fishing buddy last year installed a washdown on his boat, another had a swimming platform put on, and still another had additional lights added to his boat's center console. All these guys had their dealers do the jobs during the winter.

Of course, winter would be the best time to modify or customize your boat if you're a do-it-yourselfer. So as soon as everything is removed from your boat, plan your customizing job, and buy or order the parts now. Then you'll have what you need to complete the job during the winter.

Charts, maps

Of all the items I remove from my boat, the pile of crinkled, folded, coffee-stained nautical charts and hydrographic maps gets the most attention. During the winter I update my charts with new ones, if new ones are available. I replace ripped charts and maps torn in half. I own about 25 navigation charts and maps, so I also regroup them according to geographical areas.

I study navigation charts and hydrographic maps all winter, too, to find new spots and check out places I've heard about but haven't tried. Part of my chart study includes relating what the chart says to what I remember actually seeing out there on the water. This helps me become familiar faster with new spots that I've tried only once or twice.

A final part of my winter routine is to make sure that my registrations and licenses are renewed properly so that I'm not delayed getting out in spring. For me, this includes two Pennsylvania boat registrations, two boat trailer registrations, a fishing license and a Chesapeake Bay sportfishing license.

Take care of all these wintertime activities and before you know it, spring will be here, the fish will be around and you'll be ready to go. What's more, your rig and equipment will be in tiptop shape for fast action.



Rods and Reels

Every winter I remove the reels from my rods, discard the old line, and take the reels to the local tackle shop for cleaning and lubricating. I set a goal to hand over my reels to the tackle shop before Christmas. In this way, the store owner can take his time cleaning and oiling my reels, and replacing the drag washers, if necessary.

I get back like-new equipment. The mere few bucks he charges for this service are well-worth the season after season of unfailing equipment that my money buys.

When I get the reels back, I store them in their original boxes.

Just before next season begins, I take the reels back to the dealer for respooling with fresh line. Tackle shops near my home offer special prices on line during late winter and early spring, so the time and the price are right then for this important task. Sport shows are other good places to get your reels respooled inexpensively, and I've carted two or three reels to outdoor shows to take advantage of sale prices.—*JA*

On Stocking Trout

by Julie Lalo

It is a Friday in March. The time is 9 a.m. and the place is the parking lot of The Eagle's Nest, a fine eatery where you aren't a "local" until you deserve the distinction. They do serve a wonderful meal, but the reason the gravel lot is jammed to the grass with pickups, cars and vans has nothing to do with food. Well, actually it does, but this is a meal that will be about 24 hours in coming.

A foam spittle of oxygenated water dances in the light wind. All eyes are turned to the source of the foam: Two white fishhauling trucks, engines idling, waiting for the parade to begin.

Jeff Hosband, of Port Matilda, took a vacation day from work to bring his son and daughter-eight-year-old Todd and 13-year-old Angie. They'll spend the morning following one of these big white trucks "to get the adrenaline flowing." Greg Shuman, of Dillsburg (a two-hour drive southeast), is here to "catch the spirit," and get ready for tomorrow. That's the Big Day. To some, it's "the only day": Opening Day.

Swimming in tanks on the white Fish Commission stocking trucks are the 120 brookies, browns, palominos and rainbows that will spend at least one overnight swimming in the upper reaches of Bald Eagle Creek. The ratio of aid to get those 120 fish in the creek is about 1 to 3. For every one of the 45 men, women and children happily following the stocking truck, there will be three fish placed in Bald Eagle Creek this day. There will also be at least two separate skid marks on adjacent Route 550 from near-miss accidents, one scraped knee and a spouting of practical and learned knowledge about how best to hook any of these half-pound newly freed fish.

Legends

A few good stocking stories are ready to be told. Ken Fiedler, foreman of the Pleasant Gap Fish Culture Station, shares some of the trout stocking legends.

"A waterways conservation officer had a group of anglers who were helping to do some preseason stocking at a farm. The WCO asked the old farmer if he could drive through the field to get to the stream. The farmer had a reputation for being hard to deal with, but this time, the farmer agreed. 'Wait,' he said, 'there's one favor I'd like. Would you shoot my horse?' The horse was old and sick, and that was how it was done in those days. So the WCO went back to his volunteer sportsmen and they asked, 'Will he let us drive through to the stream?' To play a joke, the WCO said, 'No. And I'm so mad, I think I'll just shoot his horse.' He took out his gun and shot the horse, and by the time he returned, all the sportsmen had run off, fearing the reaction of the farmer. So the WCO lost his help when his joke backfired!"

Fiedler is a man who seems willing to find the best in any situation. "I was stocking in Lehigh County and the trooper pulled me over to tell me that he had just arrested a speeding driver who was going 70 mph. The driver told the officer that he was speeding to catch up to a fish truck! The next day, I was in Tunkhannock, and the WCO there told me that he had pulled over an angler who had too many fish. It turned out to



be that same man who had been arrested in Lehigh County. And on the third day, this very same man was out helping stock fish. Now if that's not a dedicated angler...!"

He goes on. "South of Bloomsburg we were conducting an in-season stocking and we announced the day and the numbers of trout. Hundreds of cars lined the highway, and in fact, blocked it. The police were frustrated. I talked them out of arresting the people in the traffic jam, and then I had to talk them out of arresting me for causing it!"

DWCO Robert Davy passes on a story from stocking efforts of the day before. "We were stocking Marsh Creek when a woman came out of her house. We had been stocking on her property. 'You better put some stocked fish in here or we'll close it off,' she threatened. 'You must really like fish,' I said. 'No,' she said, 'we don't eat them. But my cat sure likes them.' We put a bucket in right then and there."

And so the morning goes. The fish are stocked, the stories are told, the buckets of fish are admired.





Three eggs for every one catchable trout

They call these trout "catchable," and they ought to be, because that's exactly the reason why they were bred. Fish culture is a modern, genetic science, and some might even say, an art that comes with the experience of knowing trout. It's taken decades of research and a full year's worth of work to get to this day.

Bill Hoover, manager of the Commission's Bellefonte Fish Culture Station, says, "The line leading to the catchable trout involves many people."

"Every autumn the process begins with the incubation of fertilized eggs. Rainbow trout eggs need 30 days to hatch, browns need 40, and brookies need 45 days," explains John Bair, manager of the Pleasant Gap hatchery.

Fish Commission personnel start with three times as many eggs as they need to satisfy the computerized program that determines the number of fish to be stocked each year. That means 18 million eggs will be coaxed to hatch at 10 hatcheries and 138 cooperative nursery units (owned and operated by volunteer sportsmen) in the state to have six million fish to put into 4,896 miles of streams and 911 lakes.

The Fish Commission spends just shy of a dollar (91 cents) to create a 10-inch, .46-pound fish. Average cost: \$1.80 a pound, and Hoover notes, "excellent table fare.

"These fish are fed a high-quality fish and soybean meal diet to create a 'hint of tint,'" he says. "Two decades of research have led to this diet. The younger fish get a higher energy diet and this allows them to have a 200 percent weight gain in one month."

The science of fish culture

Fish culture at Commission hatcheries is state-of-the-art science. In a single year, hatchery personnel can make a 10-inch trout, something that nature may need four years to do.

Part of the reason is that every facet of that trout's life is regulated. The culturists know that habitats must be carefully controlled. The exchange rate of water at a fish culture station is meant to match the rate of the cleansing current of a stream. Brookies take the best water in the hatchery, then brown trout, and finally rainbows can take the water that's already been used for the other two.

Even the events of a stocking day have been analyzed to reduce stress on these fish. "We've unloaded a tank of fish 10 times to see how they take the wear, and to see if life support can provide the insurance to keep these fish alive," Hoover says.

They're satisfied with their stocking day procedures. Fish culturists herd the fish to one end of the raceway, net them, and send them up a "fish clevator" to a waiting tank atop a stocking truck. There the trout are carted to their destinations in oxygen-enriched water. The necessary oxygen is fed into the tanks via a diffuser that aids absorption of the oxygen into the water. "Fish can't use oxygen unless it's first absorbed by the water," Fiedler says.

The Commission has even studied how fish take in oxygen. "And we don't use 'no-bite!" jokes Bair, referring to the mistaken belief of some anglers that the Commission has some mystery chemical that keeps the stockies in the wild streams longer.

"We stop feeding the fish the day before we stock them, so these fish should be hungry. If they aren't biting, it's because

Dave Zinn



Fish Commission photo

of a combination of stress, strange water and the rough day."

Dennis Ricker, chief of the Commission Division of Trout Production, puts it in economic terms. "Our production goals are met in cost efficiency if the fish survives to be caught at least one time. And we're happy to know that they could be caught and released even five or six times."

Ricker says he understands that this isn't the driving force of Commission goals. "The production and stocking of fish is an important part of Commission operations, but we recognize that it's only one segment of the program. It fits a somewhat biological but primarily social function.

"Based on the waters that we stock, catchable trout aren't likely to survive in the wild beyond their first summer. If there is a chance they will, we'll stock fingerlings," he says. In fact, the Commission stocks 2.8 million fingerlings throughout the state for the possibility of creating a sustainable fishery.

As any angler over the age of 30 knows, the Commission's stocking program has had a checkered past. Begun at the turn of the century with horse-drawn wagons, and then railroad cars, the putting of catchable trout in otherwise marginal fishery streams didn't take long to catch on. In 1932, for the first time, a million legal-size trout were released into our waters.

Driving the decisions on how many trout to stock and where to put them were several factors: The number of licenses sold in a county, the county's population, and the amount of public land and water in the county. In the early 1980s, a new Fish Commission concept was born to "protect, conserve and enhance." It was called Operation FUTURE.

"Resource First"

Then, in 1983, fish commissioners voted to expand this idea to a program they called "Resource First." With this new philosophy, Commission specialists sought to reduce the inequities of that system by removing the "unquantifiable."

That is, they said, stocking decisions should be based on a ranking of data. It was possible to enumerate the biological, chemical and ecological data, such as wild trout populations, stream size and water quality, as well as social factors such as landowner willingness to keep the access open, nearness to public roads and parking, and relation to urban areas.

"We call this rating of social factors the recreational use potential," says Martin Marcinko, leader of the Commission Coldwater Unit, and the creator of the program.

Stream classification

The presence of wild trout leads to the formation of a resource classification system. Class D streams have few to no wild trout populations, C have fair populations, B have good.

And then there are "the best of the best," Marcinko says of Commission-designated Class A streams.

Stocking occurs in Class C and D streams, and a small number of Class B streams are supplemented with hatchery trout. Knowing that stocked trout could negatively affect a wild fishery, Commission stocking decision-makers do not put the raceway-grown "catchables" into these often more pristine streams.

"Once Class A streams are gone, the rest of the trout are really artificial," he says. Currently, the Commission has designated 400 miles of streams Class A, a number that has been slowly increasing since 1983.

The nearly 5,000 miles of stocked waterways are reviewed periodically to make sure their allotments should continue. Marcinko says that a stream can be removed from stocking because the access has been posted, acid deposition has made the waters unsuitable even as a temporary aquatic home, or industrial pollution has made the water too toxic. Statewide, the losses tend to balance the gains.

"You can't please everyone, but we think that seven years later, this program is consistent and fair," says Marcinko. In an effort to keep the program contemporary, 30,000 angler interviews have been conducted along our streams during the past two years. The results of a statewide angler opinion and attitude survey, to be conducted in 1991, will help keep the concepts of Commission trout stocking fine-tuned.

Do 10 percent take 90 percent?

There is an old adage that only 10 percent of America's fishermen are consistently successful. Marcinko says that he believes that, with the advent of educational videos, books, magazines and schools, the cliche was probably no longer true.

But as a spinoff of the streamside surveys, Marcinko has learned that not only is it true, but the majority of anglers actually go home with an empty creel.

"Some 90 percent of the anglers went home with two or fewer fish, and 64 percent of them had none. Only half of one percent caught the limit," he reports, based on his 1988 streamside data, gathered across the Commonwealth. That piqued Marcinko's interest about the effects of stocking, so he conducted an experiment on Centre County's Logan Branch. He has now proven that anglers pay religiously close attention to the stocking schedule and numbers and they even allow it to determine where they fish.

"On Logan Branch, we stocked our normal pre-season number of 1,300 trout in 1988. The second year, we announced that we would pre-season stock only 600 fish, reducing the count by just about half," Marcinko says. "One of my main concerns is angler abuse leading to the posting of property," he says. "I wondered if stocking could be used to manipulate the fishing pressure and ease any souring landowner relations. I found out that not only could it do that, but it also gives anglers even better odds at catching the limit!"

By reducing the number of fish and publicly announcing that fact, the number of Opening-Day anglers present at 8 a.m. was also reduced by half.

"But they caught more!" Marcinko says.

Purists may scoff, especially at that kind of manipulation. But speaking as an angler whose first trout was probably not in an open stream for more than 24 hours, the thought of fishing over stocked waters is the stuff memories, recreational challenges, and good food are made of.

To Dad, with Love

by Charlene Glisan photos by the author

I'll never forget our times together, just you and me, Dad. Whenever the family did something together, it was nice, but when it was

just you and me, it was special.

Being the youngest of nine children, it wasn't easy getting you for myself. Your truck driving job took you away from home most of the time. I felt as if something were missing when you were on the road, but you more than made up for it on those special occasions when you took your little girl along to fish with you. Those were great times, and although they were few and far between, I'll cherish them always.

I'm not sure how old I was when you first put a rod in my hands, but I won't forget your words of encouragement. You

showed me how to hold the rod properly, how to cast—and you didn't laugh when my bait landed only a few inches away. Patiently you reeled the line back and allowed me to try again...several times. By the way, I still haven't quite gotten the hang of it. My hook ends up in a tree or on the far side of the creek more times than not.

You always baited the hook for me because I was not going to touch one of those—OH GROSS!—worms. Eventually you gave up on trying to get me over my fear of those squiggly creatures and allowed me to use doughballs (Mom's special recipe) and corn (your favorite bait).

Remember the first time I used those? You took me to the creek by our house to try my hand at carp and suckers. We didn't catch anything that day, and I'm sure it was my fault. It's kind of hard keeping a 10-year-old quiet and still near a cool, clear stream on a summer day, isn't it? Besides, I kept tossing the doughballs off the hook. Of course, I told you that those darn fish had nibbled them off, and like the dear father you are, you went along with my imaginative stories.

Remember the first time I caught a fish? I do. You were so proud of me. You told me how great a fisherman I was, and even though it wasn't very big, you praised me as if I had caught a state record. You were always good at making someone feel special.

I remember the day we went to the place you call "The Point." You propped our rods on forked sticks—the lazy man's way, I think you called it. We were just beginning to relax for a quiet afternoon when a fish nailed your line. That rod went over the bank and in the water in the blink of an eye. I don't think I've

ever seen you move so fast or laugh so hard in all my life. What a great day that was!

And how about the time we went fishing with Donnie and caught that big catfish? We wanted to keep it to show to Mom, so we put it in the cooler. Trouble was, it was one of those soft-sided plastic ones and the spines on that cat's fins filled it with holes. Mom acted mad because we had ruined her new cooler, but she really thought it was kind of funny.

Yes, we had some fine times together, didn't we? Even though I'm a grown woman now, I'll always remember what you taught me on those days by the creek. You taught me to take a break, to stop and smell the flowers, to watch the clouds flitting across the sky, and most of all, that the simple things in life bring the most joy to the heart. I guess what I'm trying to say is that I love you, Daddy, and I'll always cherish the memories of our special times together, and even now I hope the future holds more excursions for us.



The author and her Dad then (center photo) and now (above).

Charlene Glisan is a clerk-stenographer in the Commission Bureau of Education and Information.

The Tri-Point Cahill Dun



by Chauncy K. Lively photos by the author

Dan Cahill, of Port Jcrvis, New York, is credited as the originator of the popular dry fly pattern bearing his name. However, the pattern underwent several changes by other fly tyers before it evolved into today's common pale version. The original Cahill was a dark fly with a gray body and brown hackle. Theodore Gordon lightened it somewhat, using a ginger hackle and sandy fur body, but William Chandler, of Neversink, New York, dressed the pattern as it is best known today.

The "standard" Cahill (or Light Cahill, as it is called by many) is typically Catskill in style and it wears split wings of rolled wood duck flank feather, a body of cream fox fur dubbing and pale ginger or cream hackle for legs and tail whisks. The impression is of a cream-colored insect and it is generally believed that it was dressed to represent the look-alike mayflies *Stenonema ithaca* and *Stenacron canadense*.

Actually, there are quite a few mayflies, particularly among *Stenonema*, that fit the cream-colored description, and anglers have come to use "Cahill" as a more or less generic term describing both the naturals and the patterns representing them.



Clamp a regular-shank dry fly hook (sizes 12 to 18) in the vice and tie in white 6/0 prewaxed thread about 1/3 the shank length behind the eye. Cut a small bunch of elk hair from the hide and remove the fuzz and short hairs. Even the tips in a stacker and bind the hair, tips forward, on top of the shank as shown. Trim the excess hair butts.



2 Separate the hair into three parts (top view) with criss-cross winds so that a bunch extends out each side and a third extends forward.



Form a loop of thread around the base of the middle bunch, pull the hair to an upright position and tighten the loop to secure. Apply a generous bead of thin Flexament to the base of the wing and allow it to flow into the base of the legs. Repeat on the opposite side of the wing.

In terms of sheer numbers of insects, Cahill hatches won't rival the so-called "major hatches," but it is interesting to note that even a modest showing of these duns often brings on a good rise of trout. This shows that trout are fond of these insects and it offers justification for a Cahill as a searching pattern during those in-between times on the stream when nothing much is happening in the way of insect activity.

Seeking a pattern that could be easily seen in low light levels and at the same time be relatively carefree when the action became fast and furious, I began to dress the Cahill in the style of the Tri-Point Hairwing Dun, which I described in the September 1989 Angler. It has since proven so successful that it has become my personal choice whenever a Cahill type is indicated. In addition to its effectiveness as a hatchmatcher, it is easy to follow in areas of deep shadow and generally in the dim light of evening.

But not always. One evening last summer I fished upstream through a favorite stretch of water, catching and returning several nice brown trout on a size 16 spinner that appeared to match the naturals on

the water. When I reached the upper end of my beat, the spinner fall had ended and accordingly I removed my spinner pattern and replaced it with a nymph. Then I slowly worked my way downstream, casting the nymph across-stream and allowing it to swing near the surface like an emerger. Several more trout came to net, including a fat, butter-yellow 16-inch brown.

Then I came to a stretch where a log jam covered one bank. The water was hip-deep at the edge of the logs and I always imagined there were some very large browns lurking under the cover, waiting for darkness to hide their foraging.

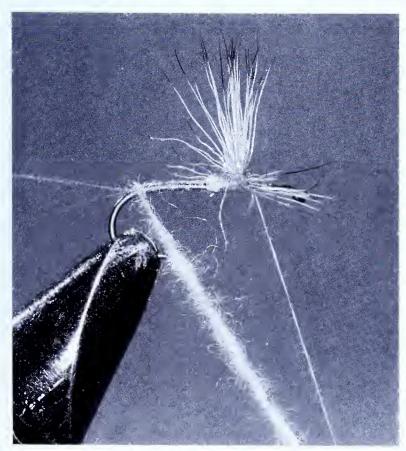
By now the light was fading fast and I tied on a size 12 Trì-Point Cahill Dun, thinking I could follow its drift along the edge of the logs. But I had forgotten to consider the silvery sheen on the water's surface caused by the low-angle light rays of the setting sun. When I made my cast, I saw the tiny ring where the fly touched the water. Then the image of the pale fly disappeared in the surface glare. But I had seen where the fly landed and I could judge the speed of the current from the drifting bubbles, so I allowed the cast to drift along,

estimating the path of the invisible fly

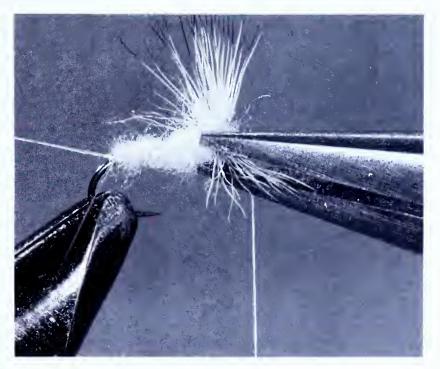
When I guessed that the drift had reached the lower end of the logs, I raised my rod to re-cast and found myself hung solidly. Rats! Hung on a log, I thought. Then my rod tip began to bounce and my reel came to life with a loud shriek as my line was drawn under the logs. I felt the leader scrape against a rough surface and suddenly everything went limp.

It was a typical end of a surprisc encounter—not the first I'd had, and hopefully not the last. It was a good reminder of how subtly a big trout can take a fly.

The Tri-Point Cahill Dun is easy to tie and the hair legs and wing render it virtually fussproof when the going gets hot. Almost any moderately stiff hair may be used, but my favorite for this pattern is pale elk air. It is readily available and it stands up well in hard use. Avoid coarse deer body hair—the kind you would use in spinning hair for bass bugs—because it is too soft for stable wings and legs. The pattern may be dressed as large or as small as you prefer. I find a useful range to be from size 12 to 18.



For tails, the in four white microfibbetts at the bend and wind the thread between to separate the tails into two split pairs. Make a twist dubbing of cream-colored fur or synthetic. Wind the working thread forward of the wing.



Wind the dubbing to form a tapered abdomen. Then make criss-cross winds of dubbing around the base of the wing and legs. Bring the dubbing forward of the wings and tie it off behind the eye. With tweezers or fine-pointed pliers flatten the hair at the base of the legs and wing. Whip-finishing the head and applying head lacquer complete the Tri-Point Cahill Dun.

Catching the HATCH

by Cliff Hauptman

I don't care if you never have the slightest interest in catching a trout, but you have to get out on a stream and experience a mayfly hatch. Short of the peril of personal danger or the pain of personal tragedy, you will not experience anything more intense, nor energy more concentrated.

The hatch is at once a celebration of life and an orgy of death—a timeless, eternal ritual and a transient, seasonal phenomenon. It is a throbbing, riotous, desperate fury, yet a gauzy, gentle dance as joyous as the giggling of babies. It is the gathering, fusing and dissipating of prodigious, thundering energies in neartotal silence, a microcosm of the birth and death of the universe. It is not something you should put off seeing for too long.

Yet, "seeing" is the wrong word. You "see" a flower in bloom. You "see" the flash of a trout. A mayfly hatch in full swing both assaults and caresses the senses, and not just the visual. You "experience" a mayfly hatch. You add it to your life.

A trout fisherman reading this might wonder who in the world I am addressing. He may doubt there is anyone alive who has not been exposed to the miracle of a hatch. But he might be wrong, because unless you actively seek the event, you may never see it. It is a happening so local that it is missed unless you are right there. Bass fishermen may never see one. Even ardent naturalists may never see one. Surely they'd see the occasional mayfly, but I am talking about the hatch, the nucleus, ground zero.

Even trout fishermen are not always there. They may experience great swarming clouds of insect activity and still be missing the real center that is located just around that upstream bend, where for these few minutes the eddying universe has focused on the surface of a tinkling stream in a green tunnel of

filtered light. Time stands still, sinks backward into swirling waters bounded by tree ferns—some 150 million years of streams replaying this endless drama, once again.

And what is actually taking place here? It is a simple story, but a unique one among insects, and it is also relatively short. In the really fabulous hatches, the ones in which it truly seems as if air and water are flying apart into chaotic, winged molecules, there are two things going on, two emergences.

First, the duns are emerging from their nymphal forms, and second, the adults are emerging from their subimago forms. It works like this: Depending on the mayfly species, the insects remain in their underwater nymphal stage for anywhere from a few weeks to three years. During this period, the nymphs molt several times to grow, but their general appearance stays largely unchanged. Not until they are ready to emerge as air-breathing duns do they rise to the water's surface, break out of their nymphal skins, and appear as entirely different, winged subimagos.

A subimago is a form of insect life unique among mayflics. An imago is an adult winged insect capable of reproduction. A subimago is an adult winged insect not yet capable of reproduction. That is peculiar; in all other types of insects, when an immature, wingless nymph makes the big change to adulthood, the appearance of wings and the ability to reproduce are simultaneous.

Not so with mayflies. Those cloudy-winged duns are not sexually mature despite their functional wings. They emerge from their nymphal skins, float on the surface of their former environment until their new wings can carry them, and then they take off for the streamside shrubbery to await their final molt. That is one part of the hatch.

A day later, as more duns emerge

from the stream, the subimagos that have been resting in the bushes from the day before are squeezing out of their subimago skins and becoming crystal-winged spinners that are now not only ready to reproduce, but are desperate to reproduce, desperate with the instinctive knowledge that hungry trout, bats, birds, predacious midges, dragonflies, spiders and the vicissitudes of the winds and weather are all intent on cutting short their last few purposeful minutes on Earth.

Perhaps the worst enemy of all is time. Adult mayflies are programmed into such a short time slot in the grand scheme of things that they do not even have mouths. They run on the fuel with which they come packaged, and they have no means of getting any more. When that fuel runs out, the mayfly's time is up, whether it has passed along its genetic legacy or not.

And so, the second part of the hatch is the mating flight of the spinners. A cloud of fevered males forms in the air above the emerging flotilla of new duns on the stream below. Female spinners flutter through the swarm and are grabbed and mated by a male while in flight. Then the females go off to drop their eggs on the water and die, struggling in the trap of the surface tension or snapped up by a frenzied trout.

For any particular species of mayfly, the drama is one that is replayed each day with a new cast of players for perhaps a week or two. The emergence of new duns from the nymphal stage, the swarming of the spinners that were yesterday's duns, the egg-laying, and the fall of the spent females are not always synchronous. That is one reason why all hatches are not equally intense. Sometimes you take part in only one phase or another, and although even those "partial" hatches can be unforgettable, you can be shaken to your very soul by

the parts played together in harmony.

Large crowds of insects scare most people. That is only natural because large crowds of insects are often, indeed, to be leared. Bees, wasps, mosquitoes and other biting flies may, at times, form swarms that are best avoided. But just as you can put aside fear to eat edible mushrooms despite the existence of poisonous ones, so must you allow yourself to experience this incomparable supersaturation of life by wading out into its midst, by allowing the wild tumult to engulf you. Let it wrap you in its fury. Let it sweep you away. There is nothing to fear.

At such a time, in such a place, you are standing thigh-deep in the lifeblood of the world. A frenzied myriad of benign, ephemeral creatures with but a single purpose is raining down, rising up, forming a virtual fog of life while trout, set off on a paroxysm of feeding hysteria, appear as if from nowhere, bumping your legs, churning the water, snapping down hapless insects in a mad orgy of death within this jubilee of birth. The circle of the universe forms and closes, and you—for this briefest moment—are at its center.

Next season it is not something you should put off for too long.



SMART PILOTING

A friend and I were cruising aboard his new boat one Saturday near Erie. While we motored in open water, another boat barreled toward us, rocketing on a collision course perpendicular to our path from the starboard side.

"Watch that nut," I said.

"No sweat. I have the right of way," my partner said. I looked up. "Back off. Just let him go," I said. Luckily, the other boater turned sharply to his starboard side, running parallel to our course.

My partner and I were lucky. I don't like to think about what could have happened if that other boater hadn't changed coursc. The rules of the road in this case were clear—the right of way was actually the other guy's. During that tense moment on open water, I realized that my partner wasn't as knowledgeable a boater as he was a fisherman.

Then I thought of my own novice boating experience 20 years ago. If I could cash in all my credits from the school of hard knocks and learn a few lessons an easier way, I would. My piloting and seamanship training would have been different. Here are some things I'd change.

Boating course

For one thing, I would have taken a boating course, even after years of experience fishing from my boat. The U.S. Coast Guard Auxiliary, U.S. Power Squadrons and the American Red Cross offer thorough, well-planned courses taught by experts. The subjects of these courses range from canoeing and kayaking to handling the largest boats.

Many volunteers who teach these courses are experienced fishermen, so in addition to the basics, they can



by Art Michaels

photos by the author

provide specific ideas to help you in areas of special boatfishing interest.

Call the U.S. Coast Guard Hotline to find the course nearest you. The number is (800) 368-5647.

Rules of the road

The rules of the road are the guidelines boaters use to avoid collisions and dangerous situations. They are important to learn because our waterways are not like neighborhood streets with signs to direct our speed and just about our every move. Unless you know the rules of the road, boating can seem like a free-for-all.

One important lesson I learned is to operate a boat defensively. When you find yourself in any situation in which you're unsure what another boater will do, slow down. Never



assume that another boat operator knows the rules of the road. Even when you clearly have the right of way, never assume that another boater knows that.

My grandfather taught me a similar lesson about operating a boat. We were puttering along in a 14-footer powered by a 15-horsepower motor. A 16-foot runabout with a 90-horsepower outboard weaved in and out of our



No one said that safe boating should be drudgery. Heck, have a ball! But don't learn vital lessons the lard way. Adopt good piloting habits so that your safety increases and your boating and fishing are more fun.

wake. My grandfather slowed down. "Let him go," he said. As the runabout pulled alongside, one of its bandits yelled, "Out of the way, old man!"

"Keep driving like that and you won't live to be my age," my grandfather snapped back.

That's good advice that I've always remembered. "Let 'em go," works hand in hand with slowing down before a situation becomes dangerous.

Volumes have been written on the rules of the road. To learn



them, consider reading *Piloting*, *Seamanship & Small Boat Handling*, published by Hearst Marine Books. This book is considered to be one of boating's bibles. You'll find it in many book stores, marine supply stores, mail order companies and libraries.

Hands on the wheel

When I bought my first center console boat and ran at full throttle, I once held the wheel with one hand and ate a sandwich with the other. Boy, was that a mistake.

A hefty boat wake hit the bow from the starboard side. The sandwich ended up in the water, I grasped the console hand rail with my steering hand so that I wouldn't fall, and the boat surged to port.

No other boats were close enough to be endangered and I was uninjured. I cut the engine fast and regained control instantly, but this piloting incident has always served me well. Now I operate my boat with both hands on the wheel—no exceptions ever.

Know where you are

Another important piloting lesson I learned almost cost me dearly. I had been drifting over a rockpile, casting for smallmouth bass. I wasn't paying attention to the drift. The boat glided softly but firmly onto a sandbar.

Luckily, fishing partners in another boat got me off the sandbar quickly, but the situation could have been very different. What if I had drifted over shallow rocks?

The lesson I learned was to develop a sixth sense to know where I was all the time on a waterway. The path to developing this sense is learning how to use your electronics skillfully, and studying and interpreting navigation charts and hydrographic maps. It's a matter of becoming familiar with a waterway as quickly as you can. In addition, never become so engrossed in fishing that you forget you are the pilot of a boat.

Aids to navigation

Learning to identify aids to navigation can help you get to know a waterway fast. Know what buoys and daymarks, for instance, show. If you don't know what a mid-channel marker looks like, you can't let it help you pilot your boat.



Planning your fishing also helps you develop the sixth sense

of knowing where you are on the water. Determining the direction of a drift, for instance, and deciding how far to drift can help you avoid ending up where you don't want to be.

I've never fallen overboard suddenly and unexpectedly. Of those who have fallen overboard suddenly and unexpectedly, as many as 80 percent of those who died could have survived had they been wearing a PFD (personal flotation device). Coast Guard statistics and data from state boating regulatory

In most boats, having a PFD "in good, serviceable condition and readily available" satisfics the legal requirement. But a lifejacket does little good in an accident unless each victim is wearing one. Tread water in the deep end of a swimming pool and try to put on a PFD and you'll know what I mean. It's difficult even in ideal conditions. But add wind, currents, waves and cold water, and donning the device is practically impossible.

The best ploy: Wear your PFD routinely and insist that everyone aboard your boat wears one.

Electronics

When you play the clarinet, study karate or take dancing lessons, sooner or later the teacher will tell you "practice

makes perfect." The same advice applies to learning to use your boat's electronics.

Boating anglers who have mastered using their VHF radios, loran C units, depthsounders and other equipment are more skilled operators than others. For one thing, they find good fishing spots faster and stay on hard-to-locate structure. They navigate better. They boat safer.

Keep practicing with your electronics. Study the owners manuals and try new operations. Keep at it. Remember: Practice really does make perfect.

Test your lights, electronics

Thinking about another lesson I learned years ago still scares me. A friend and I launched his boat one bright, sunny afternoon for some fishing action. After hours of hard fishing some 15 miles from the boat ramp, the outboard coughed, made thick, blue smoke and died.

Luckily, contaminated gas in one portable tank was the difficulty. A quick tank change with fresh gasoline solved the problem and the engine hummed normally. Even though the sun was setting and we knew it would soon be dark, we thought we had lights.

My partner hadn't used his lights all season. The last time he checked them, he admitted, was in the middle of the season before. The lights didn't work.

We lucked out. We motored up to the ramp just about the time most boaters were turning on their lights.

The lesson is simple: Test your lights, and all your electronics, at the beginning of each trip. You never know when you might need them, even though you don't plan to be out at night or in periods of limited visibility.

File a float plan

This idea goes for every trip. Tell someone responsible where you're going, when you plan to return, and who you're with. If you trailer your boat, leave a description of the trailer and the tow vehicle, with the license plate numbers. Include a detailed description of your boat—size; model; hull material and color; trim colors; engine make, size and color; registration number; and other distinguishing features.

Every boater hopes that his float plan will never have to be used for rescue purposes. Still, if you ever need assistance on the water, filing a detailed float plan lets authorities initiate the most effective search.

Stow gear properly

A fishing friend once learned another valuable lesson after nearly sustaining serious injuries. We had been fishing for several hours with no luck. While motoring to another spot, we noticed about a dozen boats huddled in an area. We raced there, hungry for whatever action we could find.

Smallmouth bass were the order of the day. The bottom was paved with them and the action was fast. The fishing was so good that my partner ripped the crankbait off his line to tie on a jig, but instead of putting the lure away, he placed in on the console.

The plug fell to the deck after a while. No one noticed it rolling around the deck during the heat of battle. My partner set the hook in a fish, but when he stepped back, he put his foot squarely on that plug. It shot out from under his Reeboks and down he went, hard, right on his derriere.

Aside from the jokes on how tough it was to sit, all of us

learned a vital safety lesson. When you use tackle and gear, put it away properly after use. In this way, no loose objects end up under someone's feet.

This idea is especially important on small boats, where space is limited, and when you're fishing with less experienced boaters or with kids. Cultivate the habit of stowing gear properly after use and you can minimize these kinds of accidents.

Getting "out of the hole"

Most boats don't plane parallel to the water right away on acceleration. For a moment, as your boat accelerates to planing speed, the stern rides low in the water and the bow juts upward. The boat planes smoothly and parallel to the water within a few seconds. This is called "getting out of the hole."

During this short time, maintaining a safe lookout is difficult because the bow rides high enough to block your complete view of where you're going. For this reason, many accidents occur at this time—when a boat accelerates to planing speed and the operator cannot see what's in front of him.

For this reason, keep a sharp lookout just before you "hit it." In this way, you can better ensure that the coast is clear in front of you during the danger time.

Operator inattention

Beware the long road home. According to Coast Guard statistics, most boating accidents are caused by operator inattention. When you're tired, the run home is the danger time for boaters. That's when you need to be especially alert. Even though the maxim may sound overdone and simple, it still applies and can't hurt to repeat it: Watch where you're going.

I know it's easy to forget this simple idea. I have forgotten it, luckily with no harsh consequences. Boating is exciting, and the sights, sounds and smells on the water are captivating. But when you're negotiating a crowded, difficult access approach, for instance, don't stare at the glistening, hypnotic waves bouncing off another boat's hull or an angler pulling in a huge fish from shore.

Wakes

Remember that as a boater you are responsible for your wake and for any damage your wake might cause. Never hedge on your speed in slow, no-wake areas. These places are usually crowded, and wakes could damage other boats and shoreline property.

One way to handle an overtaking swell, if you can maneuver, is to put your boat stern into the oncoming surge. The wake then spirals under your boat from stern to bow, after which you can get back to what you were doing.

A cresting overtaking wake could pour over a small boat's transom, swamping the boat. So the best way to avoid wake damage in a small boat is to come about and steer quartering into the wake.

Our waterways are becoming increasingly more crowded. If we don't slow down, enacting stricter speed limits is inevitable.

No one said that boating should be drudgery. Heck, have a ball! But don't learn vital lessons the hard way. While you're fishing, adopt good piloting habits so that your safety increases and your boating and fishing are more fun.

Kids Page!

by Steve Ulsh

- 1. The snapping turtle is Pennsylvania's heavy-weight champ. Adult snappers often weigh over 30 pounds, and some get as large as 50!
- 2. The bog turtle would fit easily into the palm of your hand. Adults are only about four inches long.
- 3. The softshell turtle has a very long neck and can give a collector a nasty bite if the collector isn't careful.

Pennsylvania Turtle Facts



- **4.** The musk turtle is another name for the stinkpot turtle.
- **5.** It is illegal to catch, kill or keep Blandings, redbellied, mud, smooth softshell and bog turtles. They are endangered species in Pennsylvania.

Turtle Word Search

In the turtle word search there are 12 kinds of turtles found in Pennsylvania Just like in nature, some are hard to find; others are easy. How good are you in finding them?

Turtle List

Snapping

Box

Painted

Map

Blandings

Softshell

Red-bellied

Bog

Wood

Stinkpot

Mud

Spotted

G	Ν	I	Р	Р	Α	Ν	S	Ε	D
S	C	Ν	Z	Τ	0	X	T	Ε	L
Р	Α	1	Ν	Т	E	D	1	M	L
O	R	Р	D	N	S	L	Ν	A	E
Т	Y	U	G	S	L	Τ	K	Р	Н
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Answers in next issue.

The Triple Crown of Pennsylvania Bass Fishing



Jeff Knapp

My partner Dave Keith and I were casting surface lures for bass along a stretch of the lower Allegheny River. My topwater bait's twin propellers had barely started revolving when a hungry smallmouth engulfed the offering.

By holding the boat along the edge of the river channel, we cast our baits out over the shallow, still water of an adjacent slough. In the short time it took to make one drift along this edge, we picked up several smallmouths and a nice musky.

What's notable about this catch is not the size or numbers. The story illustrates the diversity of the Ohio River drainage waters.

Keith and I were not on a serious bass fishing venture that day. We had actually journeyed to Kittanning's section of the Allegheny that summer evening to fish for flathead catfish at night. We had thrown in some bass tackle as an afterthought, a means by which to wile away the twilight period before getting down to some serious catfishing.

Indeed, the major arteries of the Ohio River drainage—the Allegheny, Monongahela and the Ohio River itself—con-

tinue to provide more and varied angling opportunities. During the cold-weather months, the walleye and sauger fishing can be nothing short of spectacular. Anglers catch catfish and muskies in the 40-pound range every year. And in spring through fall you'll find excellent bass fishing, bass action that was not a viable resource a decade ago. White bass and hybrid white bass x striped bass also provide angling opportunities. The picture would also not be complete without mentioning the action provided by freshwater drum, carp and suckers.

The Ohio River drainage is comprised of most of the streams in western Pennsylvania. These waters eventually empty into the Gulf of Mexico by way of the Ohio and Mississippi rivers. Contained within this huge drainage are many top-notch bass rivers. The Youghiogheny River quickly comes to mind. The Yough produced the former state record smallmouth bass, a 7-pound, 5.5-ounce brute taken by Larry Ashbaugh in 1983.

But the focus here is not on the proven waters, but on the ones now rebounding, the Big Three themselves:

The lower Allegheny, lower Monongahela and the Ohio River. Not so many years ago these waters were lucky to produce carp, let alone black bass. Today the water quality of these rivers has improved dramatically.

This betterment is a result of both tougher water quality restrictions and a major curtailment in river-side manufacturing. As unfortunate as this has been for the economic plight of many river communities, there is little doubt that the cleaner water is a result.

These portions of the Mon, Allegheny and Ohio are composed of "pools," lake-like environments created by navigational locks and dams. Thus, the habitat is much different from that of a free-flowing stream.

Spotted bass

The black bass fishery reflects these differences. Within these river sections an angler can catch smallmouth, largemouth and spotted bass. Yes, spotted bass.

The spotted bass, another member of the black bass family, is native to the Ohio River. Population numbers have improved in the Three Rivers in recent years. According to Rick Lorson, Commission area fisheries manager, spotted bass are still among the "species of special concern" in Pennsylvania, listed in a "vulnerable" status. This means that they are not currently endangered or threatened, but they may become so because they live in a restricted area, they occur in low numbers, or they are susceptible to exploitation and environmental modification.

The mid-1980s seemed to be a pivotal point for the bass fishing in the rivers. Allegheny County WCO Mike Wheale says good bass fishing in general began showing up strong around 1982 and 1983. Wheale's district contains sections of all three rivers. He sees smallmouths as the dominant species in his waters. The majority of spotted bass he checks come from the Ohio River.

This isn't surprising because the spotted bass prefers water that is more turbid, such as that of the Ohio River. Unlike the largemouth, the spotted bass prefers water with a bit of current, like its cousin the smallmouth. Because the Ohio River is more stained than the Allegheny, it is more conducive to the spotted bass. As you travel up the Allegheny and to a lesser extent, the Mon and the waters become clearer, the numbers of spotted bass drop. Reduced water quality also plays a part in the upper Mon.

All three rivers contain largemouth bass populations. These are most often found in the last mile or two upriver of a dam. Here the river's current is much slower, and it takes on a more lake-like character. Slough areas and island mazes also provide the conditions suited for largemouths.

One final spot worth checking is the mouths of larger tributaries, which have both reduced current and cover in the form of flooded timber and boat docks.

The spotted bass appearance is similar to the largemouth. But where the largemouth has very distinct lateral markings along its sides, the spotted bass has more uneven, or blotched markings. The big difference between the spotted bass and the largemouth is that the crook of the mouth does not extend beyond the eye on the spotted bass. On the largemouth, this hinge protrudes past the eye.

The scales of the spotted bass are larger than those of the smallmouth, and

the fish does not exhibit the verticulations that vividly mark the smallie.

Surveys conducted by the Fish Commission and the U.S. Fish and Wildlife Service illustrate the comeback of the spotted bass. Data compiled by Lorson from the mid-1980s and on shows an increase in the number of these bass. As far as location is concerned, a definite pattern was revealed.

River inventories conducted on the Allegheny River showed a marked increase in spotted bass in the 1980s. Pools 1 and 2, the extreme lower section of the river, held the majority of them.

Results on the Mon were similar. Pool 1 held 40 spotted bass. Moving upriver, Pool 2 produced 26, and none was found in Pool 3.

The surveys indicated that the Ohio River is the best spotted bass water. Pool 1 held 14 spotted bass; Pool 2, 38; Pool 3, 65; Pool 4, 71.

Most of the spotted bass sampled were between eight and 12 inches long and weighed from a 1/2-pound to a pound. Some spotted bass collected measured 12 to 16 inches and weighed over one pound.

Concerning the size of the river bass, WCO Wheale says, "As far as bass in general, I see a fair number in the 15- to 16-inch range, with an occasional 17- to 19-inch bass. I've seen some pretty nice spotted bass on the Ohio in the vicinity of Emsworth, fish running in the 16- to 18-inch range."

WCO Greg Jacobs, of Beaver County, patrols the last section of the Ohio River before it enters the state of Ohio. In his district, Jacobs sees the spotted bass as the dominant species in the Ohio. "It's rare anymore when I check a largemouth or smallmouth," he says.

Beaver River

Even though the Ohio has fine fishing, Jacobs considers the Beaver River, which enters the Ohio at the town of Beaver, the hottest fishery in his district. Plenty of spotted bass are taken from the lower Beaver. Last spring Jacobs checked a 22-inch smallmouth taken there. Fine walleye and hybrid striper fishing can also be found there.

Hotspots on the Beaver River include the old lock and dam, located about three miles up the river from the mouth. Jacobs also notes that the area around the mouth of the South Branch of Brady's Run is worth checking.

According to Jacobs, the typical bass

in his area measures 10 to 14 inches with an occasional 17- to 18-incher. He thinks many of the legal-sized bass are cropped in the spring, because there is no closed season for bass on rivers.

Typical bass fishing tactics work well here. Plenty of bass are taken on jigs and crankbaits, often by walleye fishermen. It is estimated that live bait accounts for about 40 percent of the bass. Many anglers are content to fish for "whatever's biting" by still-fishing a live minnow.

WCO Wheale thinks that most of the bass are taken within the first mile or so below the dams. Oxygen levels are higher, and baitfish are more abundant here.

For technical assistance, the author thanks AFM Rick Lorson, and WCOs Mike Wheale and Greg Jacobs.

Access

• Allegheny River. A Commission ramp is located off of Freeport Road in Harmarville. This puts you on Pool 2. There's good smallmouth fishing with some spotted bass. Two large islands downriver of L&D 3 provide plenty of bass habitat.

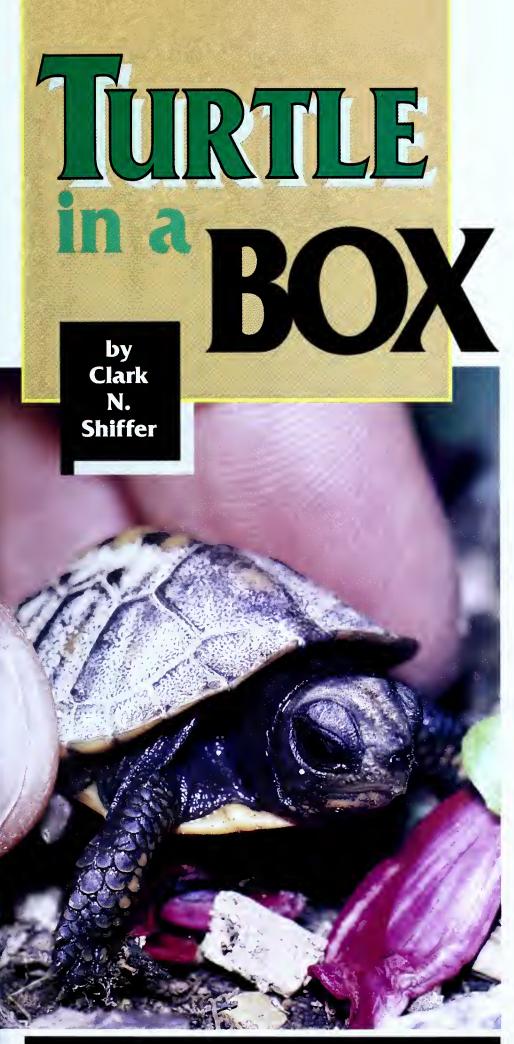
Upriver, Pool 6 has an interesting blend of river, sloughs and islands. Check out the Cogleys Island complex and the area in and around the mouth of Crooked Creek. Access is via Kittanning's town ramp, located just off Water Street.

• Monongahela River. The Commission has an access area on Pittsburgh's south side, near the Birmingham Street Bridge. This gives you access not only to the lower Mon, but to the lower Allegheny and the upper Ohio (the "Three Rivers Pool").

Another Fish Commission ramp is located just downriver of L&D 4, in North Charleroi, just off Route 88. It's a few miles north of Interstate 70. There's good smallmouth fishing with the chance for a spotted bass.

• Ohio River. The Commission Leetsdale Access is the focal point of activity on the Ohio. It's located just off Route 65, a bit below the Dashields Dam.

An undeveloped Fish Commission access can be found upriver in Glenfield. It is suitable only for small fishing boats. This area, too, is located off of Route 65.—*JK*



Box turtle: Only North American turtle that can completely enclose itself in the shell.

The commonest of our woodland turtles is a favorite of youngsters of both tender and advanced age, bird dogs, hound dogs and hogs. The castern box turtle (*Terrapene c. carolina*) is one of four United States subspecies. It occurs from southern Maine, south through southern New England and the southern two-thirds of Pennsylvania to northern Florida, west to southern Michigan, southern Illinois, Tennessee, northeast Mississippi and northern Alabama. Other subspecies range from the Florida Keys northwest to Missouri, eastern Kansas, Oklahoma and Texas.

Box turtles are so named because they alone, among all North American turtles, are able when threatened to enclose head, legs, and tail completely within the protective armor of upper (carapace) and lower (plastron) shells. The brown carapace is keeled and high-domed, either unmarked or very variably marked with yellow or orange spots, bars or radiating lines. The plastron may be tan to dark-brown, patternless or variously marked, and divided into two movable portions by a strong hinge.

Carapace and plastron fit so tightly that a knife blade cannot be inserted between them. Our musk turtle and the endangered Blanding's turtle also have a single plastral hinge, and the endangered eastern mud turtle has two plastral hinges. Their inability to use their hinged plastrons to enclose head and appendages is rivaled only by an obese, often captive, box turtle. Because captive box turtles tame quickly, they soon refuse to "box" themselves within the shells, obese or not, even when teased.

Both male and female box turtles are generally mild-mannered. Like people, some individuals are bold and fearless, others shy and fearful. However, some external features of male and female box turtles are always reasonably distinct. Male box turtles usually have bright-red to red-orange eyes, and those of the female are gray-brown, yellowish-brown or very dark-red. The rear lobe of the male plastron is noticeably concave, and that of the female is flat or slightly convex. The hind legs of the male are heavier and the claws they bear are stouter, shorter and more curved. Males have longer, thicker tails. and the vent is located farther from the shell and nearer the tail tip than that of the female. Sexual maturity is attained after four to five years, when males are larger, on the average, with a plastral length exceeding 5.5 inches.

Females begin preparing a nest soon after mating, from May to July, and may lay fertile eggs up to four years following a single mating. The female uses her hind legs alone to dig a flask-shaped nest in loose soil at an elevated site. Nesting usually begins during late afternoon and continues unabated for up to five hours. Three to eight white, thin, leathery-shelled, elliptical eggs (usually four or five) are deposited by the female, the nest is covered with soil and tamped with the hind legs and plastron, and the female then crawls away.

All or some of the eggs may later be located and consumed by predators, and some may be infertile and fail to hatch. Other eggs incubate unattended under the proper influence of soil temperature and moisture.

Fertile eggs may hatch anytime from August to October. The 1.2-inch-long hatchlings are brownish-gray, with a keeled carapace spotted and rimmed by yellow, a yellow-margined plastron, and a long tail. The plastral hinge is nonfunctional, but hatchlings emit a strong odor when threatened that may repel predators. Some may hibernate in the nest and emerge the following spring. Young box turtles are adept at staying out of sight and are seldom encountered. They feed primarily on invertebrates and frequent aquatic habitats much more than do the adults.

As they grow, they eat a greater percentage of plant food. Adults are fond of mushrooms, poisonous or not, and even though the turtles are not affected, persons eating turtles that have ingested certain mushrooms have been poisoned. Both live and dead vertebrates, largely cold-blooded, are included in the adult diet. Box turtles are therefore omnivorous, feeding on whatever food items are most readily available as the seasons change.

During cooler spring and autumn months, box turtles may be active at any time of the day, scooping out a form in which to spend the night, but they restrict activity to morning hours or after rains in the summer. Most summer days and nights may be spent in a form under rotting logs or dead vegetation, in animal burrows or mud. Up to several days may be spent in water during the hottest weather.

In Pennsylvania and other northern parts of the range, hibernation begins in late October or November. As many as four box turtles may share the same winter quarters, which range in type from loose soil, sand, vegetable debris and the mud bottoms of ponds or streams to animal burrows or stump holes. The turtles burrow as soil temperatures drop, and may eventually reach a depth of two feet.

Most emerge from hibernation in April,

but many emerge during warm spells in winter and early spring, and are killed by rapidly falling temperatures. Box turtle shells devoid of their owners are often found in wooded areas.

Adults may occasionally lose part of an appendage to natural predators, but hogs avidly root out, crush and consume them when they can. The largest number, however, die under the wheels of motor vehicles.

The entire life-and-death drama of a box turtle may continue within a home area only 300 feet to 700 feet in diameter for as long as 100 to 138 years, although the average life span is probably somewhat less than half these figures.

Any box turtle that has reached a respectable age, even by human standards, has probably been the curious object of attention for some bird dog or hound dog. Bird dogs not infrequently point box turtles, much to their own humiliation and that of their owners. Hound dogs sometimes seize and carry them about for long distances, occasionally gnawing ineffectively on the tightly closed shells, and quite often digging a hole and burying them.

People, young and old, have carved initials and dates into box turtle shells and have kept many as pets. It is presently legal to keep no more than two Pennsylvania box turtles (and most other Pennsylvania amphibians and reptiles), but fewer today are probably kept as captives. Even fewer box turtle shells are now carved. Box turtles, of course, don't care about how many of them are kept in captivity, about how many shells are carved, or whether the environment that has supported their kind for perhaps the last 10 million years will continue to support them. Though subject to higher authority, only people can care enough about things like that to make any difference to the likes of box turtles.

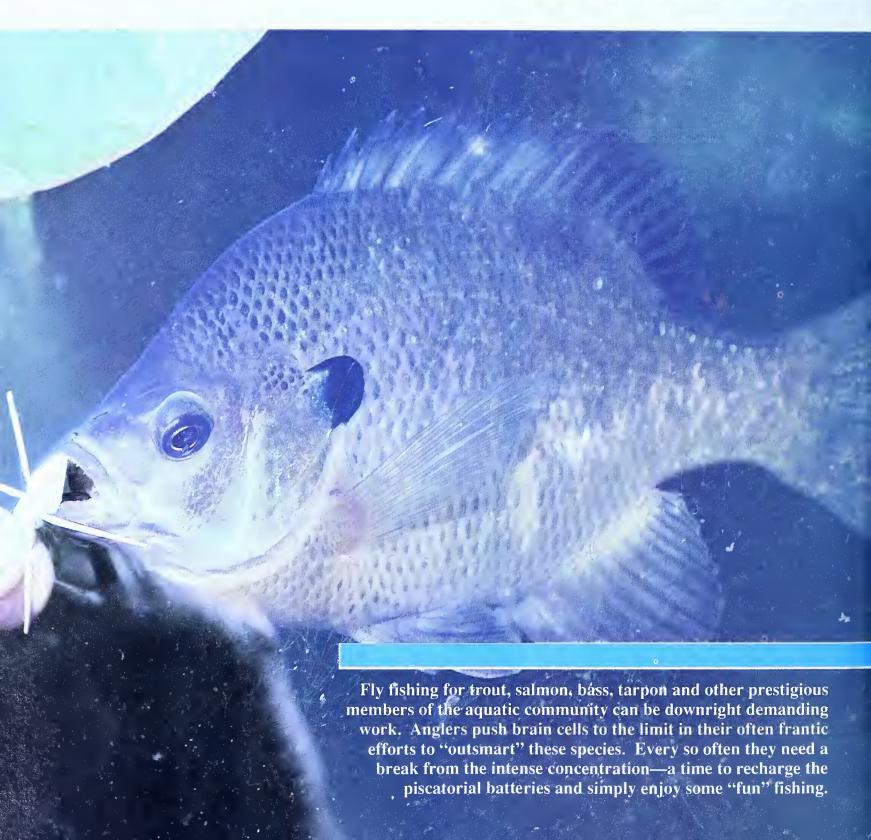
Clark N. Shiffer is the Fish Commission Herpetology and Endangered Species Coordinator.





Bluegills are for Mare for by Joe Reynolds





Relief is spelled b-l-u-e-g-i-l-l-s. Bluegills are for fun.

Bluegills don't seem to rank in importance with the aristocrats of an underwater society that fly fishermen have separated into very distinct classes. But fly fishing for bluegills is not only fun—it can sharpen skills and make you more successful with the aristocrats.

Too many of today's fly fishermen begin with trout or the glamorous saltwater species, skipping a baptism among the bluegills. My friend Simon Goldseker was a perfect example, until I took him on a bluegill trip some years ago. Goldseker was strictly a saltwater fly fisherman, more at home on the tarpon flats off Key West or sight-casting to spooky bonefish on the south side of Ambergris Caye in Central America than on some local farm pond. No one knows for sure how much he spends on his sport, but if Goldseker ever gives up fishing, we are likely to witness the economic collapse of several Latin American countries.

Goldseker figured he really wasn't fishing if land were visible in more than one compass direction. No wonder he had this perplexed look on his face when I pulled up to the ramp at a small southcentral Pennsylvania lake! At about 100 acres, the place was barely a drop in Goldseker's oceanic environment. He kept sniffing the air like a bird dog that had lost the scent, undoubtedly in a futile attempt to find the aroma of saltwater breezes.

But the bluegills happened to be on a tear that day. For a few brief hours Simon forgot the big water. Chunky, slabsided, deep-purple-colored bluegills climbed all over the small popping bugs we tossed along the shoreline. Goldseker even began to look over the surroundings with less than a jaundiced eye. The oaks and dogwoods were especially pleasing in the soft, haze-filtered sunlight of the summer morning, and I sensed that he suddenly realized that there was more to fishing than endless hours in a jumbo jet and continuous application of suntan lotion.

Some of my most memorable fishing days transpired when our family lived in a waterfront home, and this skinny youngster fancied himself as the best fisherman in the county.

I was crushed when Terry Gray jerked a trophy bluegill from the water out at the end of old man Broscoe's pier in the middle of a muggy June afternoon. It was probably the biggest bluegill ever taken from those waters. I was upset because my pet turtle knew more about fishing than Gray did. Even so, I brushed it off as dumb luck and continued to hold myself in high regard.

But those were great days. A carpet of aquatic grass and lily pads choked every inch of the water, except at the end of the pier where we swam every day and under the piers, where the shade blocked out life-giving sunlight. After swimming we would lay on the pier, feeling the warm wood against our bellies, and stare through the cracks into the dark, clear water

When eyes became adjusted to seeing through the surface glare, the bluegills were visible, swimming mindlessly around the pilings. Sometimes we dropped baited hooks through the cracks to put an offering in front of a big one, but the trophies wouldn't fit through the cracks and one of us would go overboard to unhook them.

Today I use expensive graphite fly rods and artificial flies. but I enjoy catching bluegills as much as I did when my tackle was a splintered piece of bamboo pole and I dug bait from moist, black soil with a broken-handled shovel.

One need not be a winner in the Albert Einstein Think-Alike Contest to be successful with bluegills, but there are a few tricks that can help. The single most important tactic is to work the fly or bug slowly, and in some cases the fly should not be worked at all.

First-rate bluegillers are the fishermen who seem to fall asleep after making a cast. Fishing in slow motion can be difficult, especially after a few days of fly fishing for smallmouth bass on the Susquehanna. Hours of repeated casting with a heavy outfit and oversized popping bug can bring on a severe case of "fly caster's elbow." Ultra-fast stripping compounds the problem. A fly caster who jumps from smallmouths to bluegills might be compared to Mario Andretti taking the family for a Sunday drive the day after the Indv 500.

Slowing the pace is difficult, but imperative. Bluegills will hit a moving fly, but generally a dead-drift technique will be the best producer. Throw a small fly or popper to a likely spot and then sit back and wait. Don't count to 60. That's not likely to be long enough, and besides, counting to yourself is not a nifty way to spend a day on the water.

Just watch the bug or the line and try to imagine that a big bluegill is giving very serious consideration to making a meal of your artificial. Use your imagination, but blank out all thoughts of trout, bass, tarpon, smallies or salmon.

Often bluegills don't allow much time for exercising the imagination, but on the days when they are slow to strike, fishermen with patience and imagination are going to take all the fish. An advanced degree in bluegill behavioral science is not necessary. Even those who don't know Joe Brooks from Arnold Palmer, or a Wulff from a wolf, can have a great time fly fishing for bluegills.

Fly selection is anything but scientific. Bluegills will take anything small enough to fit in their mouths, and attempt to take just about everything else. Some fanatics try to make bluegill fly selection a science; write them off as hopeless cases who probably lay awake nights trying to figure out why their mothers love them.

Fly fishing for bluegills may be great fun for experienced fly fishermen, but these diminutive tough guys are also the best species for anyone interested in learning how to fish fliesespecially children. Like most sports, fly fishing is a numbers game. Our skills develop in direct proportion to the number of hours we practice casting, and the number of fish we cateh.

A beginner who jumps right into the big-time world of trout or salmon or tarpon may be able to eount his yearly catch on the fingers of one hand. Even the experts aren't looking at very high numbers. But a beginner could catch a hundred or more bluegills in a single day, given good fishing conditions. Such experience is invaluable when it's time to fish for the aristocrats. Even the experts benefit from a few days each year on a bluegill pond.

Bluegills are found in nearly every likely and nearly every unlikely piece of water in Pennsylvania. Fishing for them provides the quiet, peaceful relaxation our aristocrat-weary brains often require. There are only three rules to remember: Go often, keep it simple, and keep it fun.





In the March 1990 *Angler*, Chauncy Lively wrote that the angling courses at Penn State were started in the 1940s. What Chauncy probably meant was that the first accredited course was started in 1947 and is still offered today.

The first angling and fly tying course was started in 1934 when I was still a student. I taught that course and another course at Fishermen's Paradise during the summers of 1934, 1935 and 1936. I continued to teach those courses until I retired from Penn State in 1972.

I taught extension courses in fly tying and techniques of fly fishing in 72 cities throughout Pennsylvania, and for many years I taught classes during the summer for the National Education Association.

Now I fish most every day and still help others with their fly tying and casting.— *George Harvey, State College, PA*

Limited Edition Knives

You can still purchase one of the Fish Commission's second edition collector knives. The knife is manufactured by the Case Cutlery Company and features a hardwood handle and locking blade. It comes complete with a cordovan leather sheath and pocket sharpener.

The second edition in the series of four is limited to 500 knives. Each knife is numbered and the Commission's "Resource First" logo is etched on the blade. The knife measures 3 3/4 inches when closed and comes in a gift set.

Only 50 knives are still available, so don't wait if you want to take advantage of this offer. Make your check or money order payable to the Pennsylvania Fish Commission and mail to: Dave Wolf, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673. Enclose \$39.50 for each knife ordered.

Wants special issue

I'm looking for a January 1940 issue of *Pennsylvania Angler*. I'll buy it or trade for it.—*John Hein*, *RD 1*, *Box 379A*, *Palmyra*, *PA 17078*; 717-533-3039.

Anglers Currents

Comments on

"The Single Mother"

I read the September 1990 "On the Water" column by Dave Wolf. Single mothers are not the only parents who need help getting their kids started in fishing. Even in two-parent households, there is no guarantee that Dad knows anything about fishing. Many parents would like to help their children take up such a wholesome pursuit, but they simply don't know how.

Recognizing this need, The Tyler Arboretum in Delaware County, together with the Delco-Manning Chapter of Trout Unlimited, co-sponsored a parent/child fishing workshop last spring. The subject was basic panfishing with spinning tackle and bait. The program was held on "Fishfor-Free" weekend so that the parents could fish with their children without buying a license. Mike Oreski, our local Fish Commission volunteer Education & Information officer, was helpful in obtaining literature for us to hand out to participants. Local tackle shops as well as some mailorder tackle dealers were generous with donations of terminal tackle.

We held an introductory classroom session and question-and-answer period in the morning. After lunch, Trout Unlimited members volunteered their time to coach the novice anglers.

This program was very successful. Everyone involved had a thoroughly enjoyable time, and we received nothing but positive feedback from the participants. Many parents indicated that they would buy a fishing license so that they could take their children fishing again.

I think it would be wonderful if Trout Unlimited chapters or other sportsmen's organizations and/or nature centers throughout Pennsylvania sponsored similar programs. Anyone who would like more information on how our program was set up can call me or write.—Mary S. Kuss, Adult Program Coordinator, The Tyler Arboretum, P.O. Box 216, Lima, PA 19037. Phone: (215) 566-9133.

Fly rodding for carp

I am writing to tell of my experience fly fishing for carp on the Tulpehocken Creek near Reading.

Every mid-April for the last three years I have gone up to the Tulp to pursue spawn-

ing carp at the fly-fishing-only stretch. The limestone water provides abundant food for largemouth and smallmouth bass, crappies, trout, sunnies and carp—big carp. The average carp is about five pounds, and I have taken them up to 10 pounds. When they are spawning from mid-April through June, the carp will take any visible streamer or large nymph. However, the most effective fly is the glow bug on a size 10 or 12 hook. After spawning the carp continue to take streamers, nymphs or glow bugs through mid-August.

The offering is best served on a 2X or 3X tippet because you may run into a 10-pound fish. Make sure you have plenty of backing, too. The best way to stalk a pod of carp is to wade upstream quietly until you can see the pod. Carp are wary creatures and will scatter to the deeper channels at the slightest provocation. But if you wait nearby for about 10 minutes the pod will always return.

The most effective presentation is a direct cast to the fish as opposed to an upstream presentation for trout. Sometimes a splitshot may be necessary to keep the bug from drifting in the slight current. When the glow bug is in place, the best retrieve is a slow twitch. Invariably, a hungry carp will slowly cruise over and make your fly disappear. Then lift your rod tip.

Warning! Hold on to your hat! Unless you have caught a truly heavy fish on a fly rod before, you may tremble as your reel screams when the 10-pound carp races away like a freight train. After you land the fish 15 or 20 minutes later, you can repeat the process until your arms are exhausted.—

Alex Russell, Philadelphia, PA

Lunker?

I've been a wet fly fisherman for 40 years, fishing for trout and panfish. Last June I was fly fishing in Buckwha Creek in Monroe County when I got a hard strike. My reel screamed and half the line peeled off my reel. Carefully reeling in, it was give and take for about 10 minutes. My leader was 1 1/2-pound test. Finally, I got this "fish" to shore. It happened to be a gray and brown log about 30 inches long. I caught it on the wet fly—Wickham's Fancy.

Everything I catch, I release for the next guy. Come to think of it, it was a nice log. This is a true story!—*John C. Hayick*, *Palmerton*, *PA*

ANGLERS CURRENTS

Bass management

I just finished reading "Pennsylvania's Bass Management" in the June *Pennsylvania Angler*. It seems as if all the area fisheries managers said the same thing—that bass can take care of themselves.

Why not stock bass in every lake that can hold a bass? We seem to dump trout in every creek in Pennsylvania that can hold a trout. Within seven to 10 days they are all gone, usually taken within 100 feet of where they were placed, by anglers who spend little on boat licenses, rods, gasoline, motel bills, lures, etc.

While this season is so very short, the bass season is on the whole summer. Remember that tournament bass people put back every bass they catch, all the people I fish with put them back all year long.

If forage is a problem, why not put the forage in with the fingerlings?—George Panarello, Jr., Boothwyn, PA

Yes, a common theme in terms of managing lake/reservoir black bass populations through natural reproduction did appear in the article. More often than not, where suitable habitat exists, natural reproduction is more than sufficient to provide bass populations worthy of angling attention. If the population is at or close to the carrying capacity of the particular waterway, stocking additional bass will not make the fishing any better. In fact, too many bass can have a negative effect on growth rates and condition of individual bass.

If anglers are having a major impact on the abundance of bass, stocking will simply mean that those fish, once they attain legal size, will be cropped off as soon as they become legal. In that case, a higher minimum size limit might be in order as the preferred management technique toward improved bass fishing.

The Commission is taking this approach on several waters right now with additional ones proposed for 1991. Along with such innovative programs, the Commission is also evaluating the response to such changes. Intensive lake sampling, sometimes on an annual basis, and even angler use, harvest, and opinion surveys add to our understanding of bass management involving special regulations. Such efforts also give the area fisheries managers a very good basis from which to decide when and

where stockings are needed.

The Commission does stock bass to maintain bass fisheries where for some reason natural reproduction and recruitment to legal size fish are insufficient or non-existent. This year, for example, we plan to stock some 81,000 fingerling largemouth bass. The majority of these fish are intended to maintain bass populations in reservoirs where we just don't get the reproduction and recruitment desired. Two waterways, Blue Marsh Lake in Berks County and Lake Nockamixon in Bucks County, will receive 58,000 fingerlings intended as maintenance stockings.

The point in mentioning this is to reinforce the idea that stocking bass is a useful tool in select waters where conditions merit the approach. It is not our intent to attempt to match the trout stocking program. The two are completely different. Even though there is little need to stock adult or catchablesize bass, the expense to do so in any great number would be tremendous because bass cannot be raised the same as trout. To turn out 10- to 12-inch bass in a major program would take more than the 15 or so months required for trout, not to mention the millions and millions of minnows required for food.

I appreciate your perception that competitive bass anglers make a substantial investment in the pursuit of angling. Whether or not that should be reflected in the level of Commission management of said species could command a lengthy letter, to say the least. However, in terms of parity with license fees, the trout/salmon stamp should certainly meet with your approval because stocked trout enthusiasts will be footing more of the bill from the stocking program than at present.

Thank you for the letter regarding bass management. I trust that my response, besides being informative, restores your confidence in how the Commission views bass management in that there is much more to it than simply stocking each and every waterway.—Richard A. Snyder, Chief, Division of Fisheries Management

Editor's Note: Since this letter was written, Fisheries Management personnel in seining Lake Nockamixon this year found numerous fingering largemouth bass from natural spawning. Based on such a good

showing, the fingerling stocking intended was redirected to other waterways, including Blue Marsh Lake.

Slobs

While canoeing and walking along local waterways, I become enraged by the amount of litter left behind by people, including fishermen.

Several times a week I walk to a local pond and pick up all the trash I find. A few days later, there is always more. Cigarette butts and packs, soda and beer cans and bottles, styrofoam worm containers, discarded monofilament line, and lure and snelled hook packaging seems to be the most common trash.

These people are not sportsmen, they are slobs.

I realize that most *Angler* readers are not slobs, but they have seen them in the past and will see them again.

Please publish an article, even a cover photo, on the litter problem. This article should include steps a true sportsman can legally take when catching a slob. I know what I would like to do to a slob, but it is not legal.—William Cannon, Pottstown, PA

Notice to Subscribers

Act 1982-88 provides that certain records of the Pennsylvania Fish Commission are not public records for purposes of the Right-to-Know Law. This means that the Fish Commission can place appropriate conditions on the release of such records. The Commission has decided to make the subscriber list for *Pennsylvania Angler* available to statewide nonprofit, nonpartisan fishing, boating, and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do NOT want your name and address included on the subscriber mailing list to be made available to the described organizations, you MUST notify the Commission in writing before January 1, 1991. Send a postcard or letter stating, "Please exclude my name and address from *Pennsylvania Angler's* subscriber mailing list." Send these notifications to Art Michaels, Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673.

Anglers Currents

Pennsylvania's First-of-State Trout/ Salmon Stamp and Print

A brook trout intercepting a mayfly nymph, by artist Mark Sussino, will be Pennsylvania's first trout/salmon stamp. In 1991, Pennsylvania anglers will purchase a \$5 stamp to help support the Commission's coldwater resources and programs. Revenues from the sale of stamps and prints will help ensure continued stocking of 5.3 million legal-sized trout annually, allow much-needed improvements to hatcheries and also help pay for the management of wild, native and stocked trout waters.

The enforcement and protection of coldwater resources will also be paid for in part by the trout/salmon stamp.

Anglers and others who enjoy collecting wildlife art can purchase framed and unframed art prints. There are several limited editions available for collectors. The Commission will receive a royalty from the sale of prints.

For more information, or to place an order for an art print, contact Fly Fisherman's Gallery, P.O. Box 330, Ennis, MT 59729. The phone number is (406) 682-4599.



Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

Angler's Notebook by Chris Dolnack



Wear your personal flotation device when fishing in cold water. Heavy clothing and chilling water temperatures could turn you into a statistic.

The metabolism of most fish slows as water temperatures cool. Vertical lure presentations are more effective at this time. Jigs, grubs and structure spoons can be worked at varying depths and speeds. Long, sloping points and dropoffs adjacent to deep water are prime spots for vertical jigging.

Tailrace fishing comes into its own when the leaves are off the trees. Larger reservoir discharges like Kinzua and Safe Harbor get a lot of attention, but don't overlook the spillways of smaller lakes. Bass, trout and walleye move into discharge areas to feed.

When fishing a jig'n pig for smallmouth bass, trim the edges of the pork frog to yield a sleeker profile—about 2 inches long and a 1/2-inch wide. You'll get more hook-ups.

To prevent plastic trailers from slipping off a jighead, heat the collar of the jighead before sliding on the grub. The plastic melts initially before adhering to the jighead as it hardens.

The larvae inside goldenrod galls make excellent panfish bait for the upcoming ice fishing season. Carefully cut the collected galls in half to retrieve the worms before heading out. Store the larvae in a refrigerated container lined with wood shavings.

It's nearly time to winterize your boat—draining the fuel, introducing winter additive, removing electronics, bringing fish attractants and bait containers indoors and other tasks. Turn your cartopper upside down for the winter and put the trailer up on blocks.

Do you store your boat outdoors? Cover the trailer lights with a plastic bag and a few wraps of electrical tape to prevent water from entering the cavity and freezing.

Trophy walleye often hold on the same structure as smaller fish, but walleye prefer depths eight to 15 feet deeper. Experts attribute this behavior to big walleye's sensitivity to light and preference for cooler water.

Yellow perch fishing can be hot just before a lake "turns over." Use small jigs tipped with a grub or minnow. Small minnows fished on a slip-bobber are also effective for catching suspended perch.

illustration- Rose Boegli

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On the Water Ou the Mater

with Dave Wolf

In the sport of hunting there is great concern over what many call "fair chase." Some of the standards are set forth by law, others are left to the discretion of the hunter—a set of personal ethics that varies from individual to individual. Standards also exist in fishing, but I have never heard it called "fair chase." I must assume fishermen do not chase the fish we pursue, and that the ethics of fishing are discussed in fishing circles with the same regularity as the newest and hottest lures on the market.

Fishing, after all, is a sport and standards are set forth by law to govern the sport. But the law does allow us leeway to set standards of our own, and many ethics are left up to the individual.

Lately I have wondered, are we really playing fair? The fishing industry has grown greatly and some wonderful new products have been introduced, all claiming to make the individual angler more successful than he currently is. Some are gimmicks; a few work; some catch anglers, and others bring more fish to the net.

I'm all for the new products. For example, I love graphite rods and fly lines that cast farther and need little attention. I like boats that move me swiftly across a body of water by gasoline-created power or quietly by electric motors. They are faster and quieter than I am, and my muscles ache less at day's end. The gasoline motor takes us there faster, allows us to cover more water in a day than we used to cover in a week, and the electric motor allows us to run the motor with a foot peddle and cast. Now if that isn't enough, the electric also runs quietly and spooks fewer fish than a noisy gas motor or a pair of banging oars.

Most of us have accepted high-speed boats and electric motors as some kind of gift from innovative fishing and boating geniuses. After all, we have less time to fish than we had in the past and these modern-day conveniences have been accepted as quickly as indoor plumbing.

Next came depthfinders that show us the bottom of a lake contour, and then fishfinders that show where the fish are. These is fine, but on lakes like Erie, knowing where the fish are does little good unless you want to jig vertically up and down in 50 feet of water. That problem was solved quickly with downriggers, which took our lures to depths never thought of before, and kept them there while we tooled around the Great Lake.

Our rods are lighter and our lines are thinner yet stronger. Lures have more movement, and are more lifelike than ever before. We have come a long way in fishing technology and I suspect we will go a lot farther in the near future.

I have used all these devices and I realize that none guarantees fish. I have sat over a school of striped bass at Raystown and cast until dark and then cast for another few hours and still went fishless, as did my guide. I have sped across lakes and had friends expertly maneuver the boat into casting position via an electric motor. Sometimes I took fish, sometimes I did not. I have fished Erie with downriggers and fishfinders, and although I have been successful most of the time, there have been those days when there were no guarantees.

Are We Playing Fair?



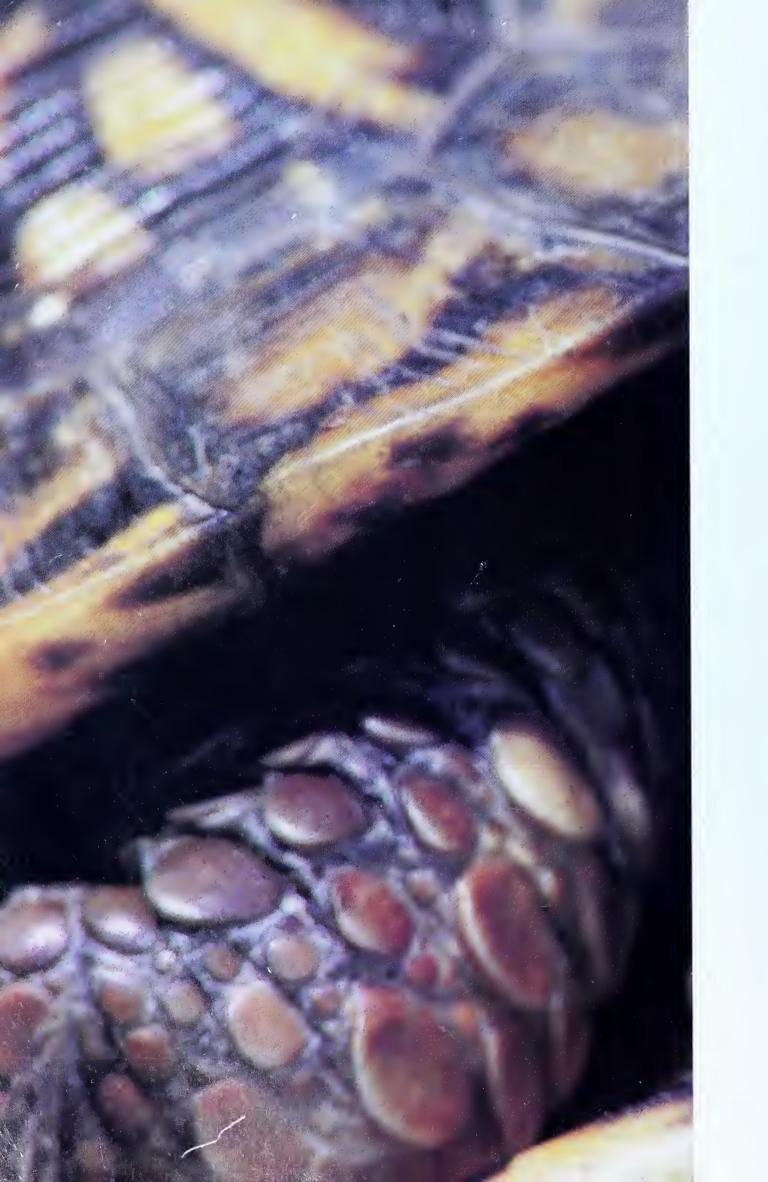
Art Michael

No, I don't think we will ever go back to the days when we had to row our boats and cast into murky depths with nothing more than hope or knowledge of a lake or stream. I must wonder, though, how much further we can go before the game is no longer fair. I am concerned that the deep-water sanctuaries are gone, that weedless lures have taken us deep into the fish's hiding places. I am concerned that with well over a million anglers in the Keystone State, the fishing pressure and high-tech gear may make the game unfair—and if and when we reach that point, I wonder who is going to hold up his hand and say, "that is far enough."

We are all asked to set our own standards and to abide by them. We must judge for ourselves when we have tipped the scale too far in our own favor.

The fish have not changed; we have. We read more and we take our sport more seriously. Most visit the waters to eatch fish. The more, the better seems to be how we gauge success. It is the measuring stick that rules many of our lives and fishing is no different. Perhaps we should be glad that we have it much better now than in the past. After all, some of our fishing is as fast-paced as our work—trying to change direction or even give it much thought is not in our nature.

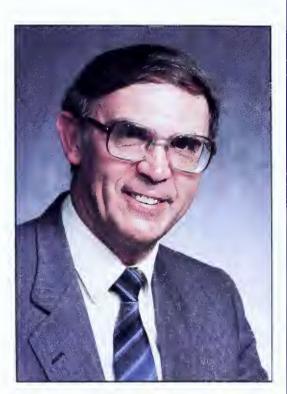
Then again, maybe we should go back to simpler times, when learning a lake took years, and only those who spent hour after hour there knew of the fish, their habits and hiding places. I have yet to form an opinion on the subject, but I still have those days when I wonder—are we playing fair?





Straight Talk

Now is the Time for Action



Edward R. Miller, P.E.

Executive Director

Pennsylvania Fish Commission

Boating activity in Pennsylvania continues to expand rapidly. The Fish Commission has been responsible for managing boating activities on Pennsylvania's waters since 1931, and the Commission has built the program into one of the largest, safest and most highly respected programs in the country. Independent surveys show that more than 2.9 million (27 percent) of Pennsylvania's residents boat regularly. These residents average more than 10 days of boating annually on Pennsylvania waters. The Commission will register nearly 300,000 boats in 1990, a number that has increased by five percent per year over the past 15 years. In addition, another 80,000 to 100,000 unpowered boats use our waterways and facilities.

Pennsylvania must design and implement a comprehensive statewide boating program. A complete, well-designed program must identify all boats, and their operators need to be given full opportunity to participate in Commission safety education efforts. Registration of all boats is the fairest, most convenient and most economical method of reaching Pennsylvania's goal to keep Pennsylvania waters clean and safe for all boaters.

In the past 18 years, 434 persons have lost their lives on Pennsylvania waters. The records quite clearly show that when adequate regulations, sufficient law enforcement efforts, proper boating education programs and safe access and waterways are provided, lives are saved. However, the Fish Commission has been unable to expand its efforts over the past 15 years because boating revenues have not provided for inflationary cost increases, let alone essential public program expansions.

Funding of Pennsylvania's boating program is lagging behind its needs. Boat registration fees have not been increased since 1963, and it is necessary to update the current inadequate fee system so the many services needed by the boating public can continue to be provided. To accomplish this, the Commission has proposed the first step to be a new registration system that must be implemented within the next year if we are to continue current services, begin efforts to update our program and protect the lives and property of our boating public. Soon we will be asking the Pennsylvania General Assembly to act quickly on adjusting registration fees for powerboats to provide revenues needed to fund a modern boating program.

The Fish Commission needs your support to obtain new regulations and legislation to do the job that must be done. Please advise your state senators and representatives that you support a well-funded boating program. Your support is essential because the future of boating in Pennsylvania waters and the many public benefits resulting from this very popular program are in serious jeopardy.

Pennsylvania Fish Commission

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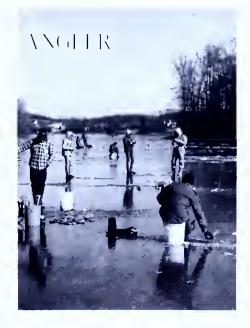
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The Keystone State's Official Fishing Magazine

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The cover

This issue's wraparound cover shows the action at Marsh Creek Lake, in Chester County's Marsh Creek State Park. George Dolnack took the picture. Let your ice fishing sizzle this season with the information in this issue on pages 4 and 26. And to cash in on an expert lesson in ice fishing, turn to page 10. If you were a kid in the 1940s, the story on page 19 may bring back memories. Do you rise to a challenge? Take the test on page 7. Finally, learn more about how the Commission spends fishing and boating dollars by reading the stories on pages 15 and 23.



Getting Started in Ice Fishing



Getting started in ice fishing really isn't all that complicated or expensive compared to other angling sports. The total investment in a graphite fly rod outfit or a boron bass rod and baitcasting reel, for example, may run more than an entire array of ice angling gear.

For under \$100 you can get the basics

necessary for heading onto the ice. Of course, as in any other sport, there are differences in equipment quality. Yet, most ice fishing gear is simple and you don't have to make decisions on whether you want graphite or boron rods or casting and spinning reels as you might have to when choosing tackle for openwater angling. But there are choices to be made, such as whether to buy a \$3.75 wooden tip-up or invest in one of the new \$12 models with features that make it wind-proof and show when a fish is running with the bait.

Such details involve personal choices based on budget and just how serious you are in making the sport an annual pursuit. To get started it's a matter of first attending to the basics. Here is a shopping list of items you'll need before your first walk on water.

Ice auger

Motorized augers save elbows and

backs, but they probably aren't worth the investment until you determine just how much you enjoy and participate in the sport. Their costs ranges from \$200 to about \$250.

Spoon-type augers, which do a good job on thinner ice, cost about \$25. The popular and efficient "corkscrew" drills, some with interchangeable blades, run \$35 to \$50.

Tip-ups

In Pennsylvania, the law requires that no more than five holes may be used by an angler at one time. For this reason, most anglers invest in only five tip-ups, although a family of, say, four may legally tend 20 of the excavations.



Mark Strand

Getting started in ice fishing isn't complicated or expensive compared to other angling sports. For under \$100 you can buy the basic gear.

These simple devices consist of little more than three crossed sticks, a small spool to hold excess line, and a strip of flattened wire that springs into the air when a fish strikes. Tip-ups of this sort cost \$3 to \$4 each.

Some newer tip-up designs include a popular model that operates with magnets.

When a fish strikes and the line moves the spool, a magnet moves and the signal device shoots upward. On another style of tip-up, a device that stands well out of the water indicates if the fish is taking the line—a helpful option when fishing for walleye or pickerel. These tip-ups sell for \$10 to \$13 each.

Jigging sticks

These items are simplified fishing rods, albeit considerably shorter in length. Many anglers save money on these by cutting down old fishing rods and attaching cheap baitcasting reels to them. But most jigging sticks don't require reels. Excess line is wrapped around a wire holder and the fish is simply pulled through the ice hole hand over hand

Depending on its features, you can buy a jigging stick for anywhere from \$2.50 to about \$8.

Ice scoop

When you drill the ice hole, there will be lots of small chips and slush floating in the hole. It's essential to remove these pieces for the most efficient use of tip-ups and jigging sticks. To keep your hands from getting numbed by the water, you need an ice scoop, complete with holes in the trough. Ice scoops sell for about \$2.

Minnow bucket

Choose from foam-type buckets (\$2) or metal or hard plastic buckets (\$5 to \$10), or use the same one one you use for keeping minnows alive during summer fishing.

Be sure to use a bucket with a lid so that the minnows won't jump out and the water won't freeze as quickly. Make sure the lid is attached so that it can't blow away especially lids on foam buckets.



Mark Strand

Minnow net

This inexpensive item saves your hands from frostbite and helps your chances of quickly catching the minnow you want. A minnow net, like the ones used to snag fish in an aquarium, run from 50 cents to \$1.

Bait

Ice fishermen use everything from fathead minnows to mousie grubs. On tipups, minnows are used exclusively. Medium-sized shiners run about \$1.50 to \$2 per dozen with the smaller and hardier fathead minnows costing closer to \$1 to \$1.25 per dozen.

Jigging baits such as grubs and maggots. also known as "spikes," corn borers, and golden grubs or mealworms run from \$1.50 to \$2 for 50 to 75 of the tiny morsels.

Goldenrod grubs are free for the taking in the galls on goldenrod stems, and they also make good bait. Store them in Petri dishes or 35mm film containers and carry them in your shirt pocket to keep them warm and active. I've already had grubs freeze when kept in the foam-type cups in which they're sold. Keep them in the refrigerator between trips.

Miscellaneous gear

Of course, there are some other miscellaneous items needed that you may or may not already have in your summer tackle box. These include hooks, braided or monofilament line in the 6- to 12-pound-test range, ice flies (small weighted lures onto which you impale the live bait), depthsounders, long-nosed pliers and more. Fishing tackle shops with knowledgeable clerks can advise you on these additional items.

A book on the subject of ice fishing may also come in handy if you read it before your first trip atop a lake. Better yet, search out a friend who knows what this coldweather sport is all about and accompany him or her on a trip atop a lake or pond. A few hours with a good teacher can fill you in on the basics of this wintertime avocation.

Of course, a thermos of hot coffee or chocolate, some sandwiches and soup (maybe prepared right there on the ice on a stove), and especially fresh perch or crappie fillets fried at the very spot they were caught add to the fun and fascination of ice fishing—a sport enjoyed by growing numbers of anglers who just can't stand the thought of staying indoors when there are fish to be caught.

Safe Ice

You might be anxious to enjoy ice fishing this season, especially after remembering the heat and dryness of last summer. But be cautious! Thin ice can be dangerous. Here are some tips on determining ice safety.

- · Lakes don't often freeze uniformly. Early and late in the season, ice that's safe in the morning may be dangerous by late afternoon.
- Prolonged cold weather makes safe, thick ice. Use an auger to test ice. Four inches of clear blue ice is probably safe for lone anglers and small groups of fishermen.
- Single, unbroken pressure cracks in ice are probably safe to cross, but stay away from the areas where cracks meet or intersect.
- Be wary where water levels change-rivers, streams, inlets. outlets, coves, eddies, springs and similar places. Moving water erodes ice from beneath. So does wind pushing water under ice.
- Avoid areas with stick-ups. Protruding logs, brush, plants and docks absorb heat from the sun, thus weakening surrounding ice.
- Dark areas of ice may reveal places where ice is thin. Avoid these spots.



The Navigation Chart User's Test

by Art Michaels



photos by the author

If you fish on Lake Erie, Presque Isle Bay or the lower portion of the Delaware River, you probably have a few National Ocean Service (NOS) navigation charts aboard your boat. But how much do you really know about those charts and about using them? Are you really getting the most out of your charts?

Navigation charts are the most important item you own to navigate safely, so take this multiple choice and true/false test to see how much you know about nautical charts. Circle your choices for the nine items and then check the answers.

1. The National Ocean Service (NOS) in the National Oceanic & Atmospheric Administration (NOAA) is:

a) the U.S. government agency responsible for creating and revising our nautical charts, b) a branch of the U.S. Coast Guard, which produces navigation charts, c) partly responsible for making and revising navigation charts with the Coast Guard.

2. All navigation charts are updated:

a) once every two years, b) once every year, c) when they accumulate enough changes to warrant updating.

3. The following agencies and organizations are allowed to inform NOS of chart additions, changes and corrections:

a) only the U.S. Coast Guard, b) the Coast Guard, U.S. Power Squadrons, Coast Guard Auxiliary, U.S. Army Corps of Engineers and any boater on the water, c) only NOS employees are allowed to suggest changes.

4. How much of the U.S. coastline is charted? a) about 75 percent, b) about 50 percent, c) the entire U.S. coastline.

- **5.** *True or false:* Bathymetric maps, also published by NOAA/ NOS, are excellent fishing tools.
- **6.** *True or false:* A navigation chart is a better tool than Loran C for safe inshore navigation.

7. Obtaining navigation charts is:

a) done by mail directly from NOS and through authorized over-the-counter agents across the country, b) done only by mail order, c) difficult because charts are most often in short supply.

8. *True or false:* There is no single publication available that explains every symbol and abbreviation found on navigation charts.

9. NOAA/NOS navigation charts are accurate:

a) within 177 feet on all charts, b) within 55 feet on charts scaled to 1:20,000; 66 feet on charts scaled at 1:40,000; and 133 feet on charts scaled at 1:80,000; c) within 100 feet on all charts.

Answers

1. A. NOAA is part of the U. S. Department of Commerce. The National Ocean Service is one of four NOAA branches, including the National Marine Fisheries Service, the Office of Satellite Operations and the National Weather Service.

In NOS is the Office of Charting and Geodetic Services. In this office are the National Geodetic Survey Division, the Aeronautical Charting Division, and our focus, the Nautical Chart Division.

The Nautical Chart Division is tiny compared to other U.S. government mapping agencies. The U.S. Geological Survey and the Defense Mapping Agency each employ about 3,000 to 4,000 people. The Nautical Chart Division employs about 300 people.

2. C. All navigation charts are updated when they accumulate enough changes to warrant updating. The agency updated about 400 charts annually before the 1980s. Budget and personnel cuts began in the early 1980s and forced the agency to reduce the number of charts scheduled for revision.

The agency currently maintains some navigation charts. Each year only about 10 new charts are created. These charts are primarily geared for the safety needs of the Department of Defense. For instance, when a new Naval base is established, the Navy needs a new chart of the harbor.

3. B. Our nautical charts are accurate and dependable for two reasons. First, the people who make them are conscientious, dedicated and professional. Second, the National Ocean Service's Cooperative Charting Program is very successful.

In this program, groups whose members are regularly on the water report chart changes, additions and corrections directly to NOS. These groups include the U. S. Power Squadrons, Coast Guard Auxiliary, the Canadian government and the Lake Carriers Association. In addition, NOS regularly communicates with the U.S. Army Corps of Engineers and the Coast Guard to identify anything that would change a navigation chart.

Critical changes appears every week in the Coast Guard's *Notice to Mariners*. These corrections are safety details that could sink a boat if they weren't corrected on a chart. This information is so important to revising and updating navigation charts that it's handled by a separate section of agency cartographers who oversee all critical changes.

If you look closely at a nautical chart, you'll see on every one an item that explains where corrections and changes can be sent. Along these lines, NOS receives many chart changes, corrections and additions from individual anglers and boaters. Each suggestion is carefully reviewed by NOS.

4. C. The priorities of NOAA/NOS are the nation's defense, and for a long time that most often has meant first meeting the needs of the Department of Defense. Because the safety of our ships is so important, the entire U.S. Coast is charted, along with the Great Lakes, Hawaii, Alaska, Guam, Samoan Islands, Puerto Rico and the Virgin Islands.

The need to chart all our waters first became evident nearly 200 years ago. Around 1800, the U.S. Coast Survey was created when Congress passed legislation authorizing a survey of the coast. At that time, "the coast" was mostly the East



Coast. Our westward push spawned the idea of surveying the land, so with this change, the agency's name became the U.S. Coast and Geodetic Survey.

Increasing commercial and defense requirements eventually led to charting all our coastlines and the Great Lakes.

As bigger ships required deeper water for commerce, the agency charted deeper water along our coastlines and in the Great Lakes. During the 1930s, 1940s and 1950s, the development and refinement of the echo sounder let the agency adopt this method of deep-water surveying as standard. The U.S. Congress authorizes NOAA/NOS to chart U.S. territorial waters to 100 miles offshore.

5. True. A bathymetric map gives you a different view of the bottom than a navigation chart. Nautical charts provide numbers of depth soundings with an occasional contour line. "Bathys" show the bottom contour in different colors. They also include information on the composition of the bottom, and they let you see the sizes and shapes of specific underwater structure much more clearly than nautical charts.

That's why they can easily be used for fishing so effectively. Structure is more easily distinguished on bathys, and you can order them with Loran C overlays so that you can more easily locate specific spots. Contact: NOS, Distribution Branch (N/CG33), Riverdale, MD 20737. The phone number is (301) 436-6990. Ask for Catalog 5, in which you'll find all bathymetric maps.

6. True. NOS chartmakers don't put Loran lines on most inshore charts because Loran C doesn't meet Coast Guard standards for accuracy in many inshore waters. Land masses, buildings, antennas and other structures sometimes interfere with Loran C signals and create false readings.

Furthermore, limited visibility can make familiar water unfamiliar. So at night, in fog, and whenever visibility is poor, you're better off proceeding slowly and letting the chart guide you from one navigation aid to the next. Following your Loran C could put you aground or cause a collision with a fixed object.



Chartmakers, survey crews, ships, planes, equipment and other checks and doublechecks are the heart of NOAA/NOS's guiding principle of chart accuracy. Anyone on the water can suggest chart additions, changes and corrections to NOS. See your charts for the address.

7. A. The National Ocean Service lists its navigation charts in four free catalogs. Catalog 1 includes the Atlantic and Gulf coasts, Puerto Rico and the Virgin Islands. This catalog includes Delaware Bay and Delaware River charts, and all Atlantic Coast and Chesapeake Bay charts, if you trailer your boat to these locations.

Catalog 2 includes the Pacific Coast, Hawaii, Guam and the Samoan Islands. Catalog 3 is Alaska. Catalog 4 includes the Great Lakes and adjacent waterways.

Each catalog includes prices and complete ordering information. Be sure to tell NOS which catalog you want. Use the NOS address and phone number above.

In addition, catalogs list authorized agents that sell NOS nautical charts and other NOS publications. These outlets often include marinas and marine supply stores.

- **8.** False. The 52-page book *Nautical Chart Symbols and Abbreviations* is Chart No. 1 in each catalog. It identifies and describes all symbols and abbreviations used in nautical charts so that you can understand and interpret navigation charts. You can order it as you'd order any other chart.
- **9. B.** NOS has specific accuracy standards that vary with the scale of the chart. Charts with a scale of 1:20,000 are accurate within 55 feet. Charts scaled at 1:40,000 are accurate within 66 feet, and charts with a scale of 1:80,000 are accurate within 133 feet.

NOAA/NOS maintains strict standards of accuracy because that quality is the most important requirement of a good nautical chart. Thus, the agency goes to great lengths to ensure the accuracy of nautical charts.

New charts and revisions of old ones begin with determining or redetermining exact known land positions. From these references the hydrographers identify what can't be seen underwater. Every chart correction, change and addition must be confirmed. One way the agency accomplishes this enormous task involves NOAA's Hydrographic Survey Field Offices. The West Coast unit is based at the Pacific Marine Center in Seattle, Washington. The East Coast unit is located at the Atlantic Marine Center in Norfolk, Virginia. The East Coast Unit serves the Delaware River and Bay, and both units serve the Great Lakes.

Five survey ships and 10 others make up the fleet at each center, with smaller craft assigned to inshore survey work.

In addition, photogrammetry is a vital part of nautical chartmaking. The agency's coastal mapping section flies aircraft over survey locations because aerial photographs are most useful in confirming chart revisions, additions and changes.

The survey crews, ships, planes, equipment, cartographers and other checks and doublechecks are the heart of NOAA/NOS's guiding principle of chart accuracy.

Scoring

8 or 9 correct:

Master: You know charts inside-out!

6 or 7 correct:

Expert: A pro who knows what's happening!

5 or 6 correct:

Novice: Boating is in your blood. Keep learning!

3 or 4 correct:

Amateur: Don't neglect this info!

Keep reading Pennsylvania Angler!

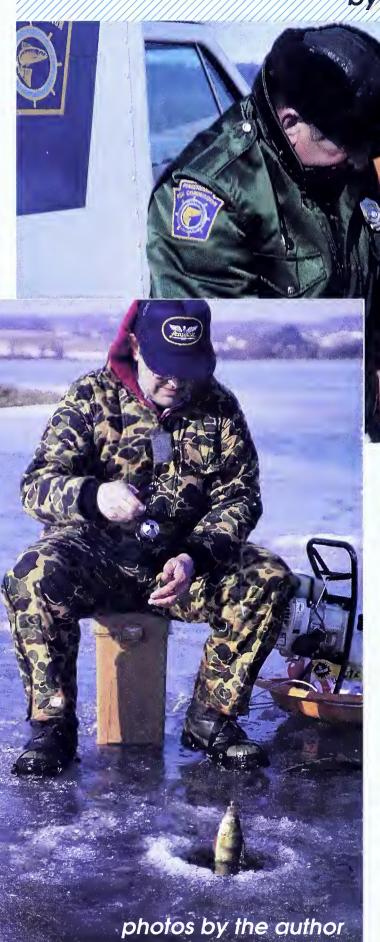
1 or 2 correct:

We all begin here. Welcome aboard!



Struble Lake Ice Fishing Clinic

by Chris Dolnack





Mark your calendar for the Struble Lake Ice Fishing Clinic on January 12, 1991, from 10 am to 1 pm. For more details, call the Chester County Parks and Recreation Department at (215) 344-6415.

Anglers who would like to expand their fishing year or learn more about ice fishing should mark January 12 on their calendars. That's the date the Pennsylvania Fish Commission and the Chester County Parks and Recreation Department host their annual ice fishing clinic at Struble Lake, in northern Chester County.

This year marks the tenth edition of the affair that features expert advice on equipment, lure presentation, ice safety, fish cleaning and cooking. The clinic is the brainchild of Chester County WCO Ray Bednarchik, who along with Chester County Parks and Recreation Department Director Dick Sprenkle has conducted clinics since 1982. Both Bednarchik, a 29-year Fish Commission veteran, and Sprenkle are avid ice fishermen.

"Our goal from the start was to generate interest in ice fishing in the county," says Bednarchik. "Ten years ago we'd check the same handful of dedicated ice fishermen on one of the area lakes. Since the clinics, ice fishing has really taken off in Chester County."

"Today we see a number of first-time ice fishermen on any given patrol," Bednarchik says. "And many of the anglers we talk to—new and experienced alike—comment on how much they enjoy the clinic."

From that first effort, which was publicized in local tackle shops and newspaper columns, the Struble ice fishing clinic has evolved into an ice fisherman's carnival of sorts. Local tackle shops are invited to display their wares, and many do even though they are not permitted to sell merchandise at the clinic site. Some even offer door prizes.

Local fishing guides and taxidermists also exhibit and answer questions about local angling opportunities and care of that once-in-a-lifetime trophy. In recent years, fishing licenses have been available for those who would like to use their newly acquired knowledge right away.

The Elverson-based Muskellunge Association of North America (MANA) staffs a food booth, selling hotdogs, coffee and hot chocolate. All proceeds from the food concession are used in the MANA's educational programs, according to MANA President Frank Brown.

Recent clinics have featured Fish Commission personnel demonstrating



the finer points of filleting and cooking fish. Volunteer E&I Corpsmen Bobby Good, Ray Rudy and Godfrey Studenmund staff exhibits and continue the fish filleting and cooking demonstrations started by Southeast Region Assistant Supervisor Barry Pollock. The aroma of freshly batter-fried perch, bluegills, crappies and walleye drifting across the parking lot draws quite a crowd around noon.



Over the years the Struble Lake Ice Fishing Clinic has evolved into an ice angler's carnival, fun for young and old.

Last year's clinic, according to Sprenkle, drew some 1,100 people, the largest crowd yet. Park rangers directed the flow of traffic in and out of the day use area, parking some 300 cars.

Struble Lake is a 146-acre Fish Commission waterway located between Honeybrook and Morgantown that was impounded in 1972 as a joint project between the Chester County Water Resources Authority and the Fish Commission. Conceived primarily as a flood control impoundment, Struble Lake also offers good largemouth bass and walleye fishing and some of the best panfishing in the region. Slabside bluegills and crappies run up to onc pound. Large channel catfish are also taken.

The Fish Commission purchased the land around Struble Lake with funds from the Project 70 program and until recently leased some of the land for crop production. The Chester County Parks and Recreation Department, says Sprenkle, maintains the day use areas, including the launch ramp, parking lot. access roads, picnic areas and lawn mowing, under a lease agreement with the Fish Commission. To date, the unique cooperative effort has worked well to the benefit of all partics—especially fishermen.

So mark your calendar for the Struble Lake Ice Fishing Clinic on Saturday, January 12. Clinic hours are 10:00 a.m. to 1:00 p.m. For more information call the Chester County Parks and Recreation Department at (215) 344-6415.





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Ice Fishing Quiz

Read the article "Getting Started in Ice Fishing" on page 4. After you read the article, see how many questions you can answer without rereading the story. Answer all the questions, and then check the answers.

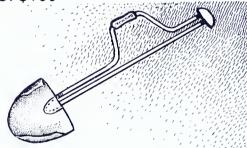
Answers on page 29.

1. You can start getting into ice fishing for less than:

A. \$50

B. \$75

C. \$100



2. What is the name of the tool that helps cut holes in the ice?

Answer

3. How many tip-ups is one ice angler allowed to use?

A. 5

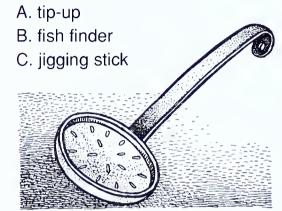
B. 6

C. 7

4. Some of the modern tipups use a _____ to move the signal device.

Answer

5. A simplified rod used in ice fishing is a:



6. To remove chipped ice and slush from an ice fishing hole, you need a:

Answer

7. Name three types of materials used in making minnow buckets.

•

2._____

3.

8. What are the two reasons why your minnow bucket should have a lid?

1._____

0



9. What is the only bait you should use with tip-ups?

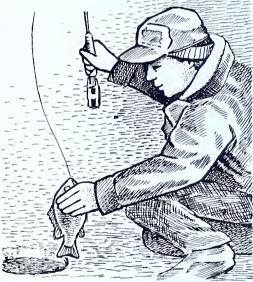
Answer

10. Which of the following is not a recommended ice fishing bait?

A. small trout

B. maggot

C. mealworm



11. The best types of line strengths to use for ice fishing are:

A. 6 to 12 pounds

B. 14 to 18 pounds

C. 20 to 30 pounds

12. Ice flies are:

A. live insects

B. small, weighted lures

C. artificial depthfinders

illustration- George Lavanish

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Behind the Boating Safety Scene

by Cheryl Kimerline Hornung

Do you have questions on the safety equipment you need on your 16-foot runabout? Which Pennsylvania lake are you going to vacation on next summer? Which Keystone State river are you going to take your scout troup on for its next outing? Where is the nearest boating safety class? The city in which you live has a low-head dam that is not marked, so who can help officials obtain buoys? Your daughter is going to operate your boat in Maryland. Where can she obtain a boating safety certificate?

The Fish Commission Bureau of Boating through the Boating Safety and Education Division provides many services for Pennsylvania boaters. Originally a boating manual and a few public education courses were offered. Here is an overview of what the division members now accomplish.

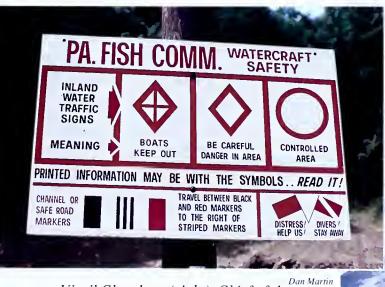
Youth boating program

The typical scenario on a warm summer day is arriving at your local park to go fishing or boating and finding a group of excited, noisy teenagers wearing PFDs scattered around a canoe trailer. You notice that there is a Fish Commission vehicle towing the canoe trailer and you wonder what they are doing. This is part of a boating and water safety awareness program, designed to promote boating and water safety education by involving students in the proper procedures used in recreational boating. Originally developed for middle and high school students in Pennsylvania public school systems, this course has been expanded to conserva-

tion camps, summer camps, YMCAs, and Boy Scout and Girl Scout groups.



Boating Education Specialist Dan Martin (above, yellow pants) instructs rescue professionals.



Virgil Chambers (right), Chief of the Boating Safety and Education Division, directs a training session in Harrisburg on the Susquehanna River.



Boating and water safety awareness program instructor Heidí Milbrand (above, wearing cap) and **Boating** Education Specialist Dan Martin (right, wearing cap) teach classes of kids. The program promotes boating and water safety by involving students in recreational boating's proper procedures.



Cheryl Kimerline Hornung

This program gives students the opportunity to practice boating and water safety skills in a pool or protected water area. The students take turns practicing swimming while wearing a personal flotation device (PFD), swamping small boats and handpaddling to safety, performing basic rescues (reach and throw) and practicing basic boat handling skills.

Providing students the opportunity to become familiar with different types of small boats and safety equipment is the primary goal of the program. They learn what safety equipment is required by law on each type of boat. Rules of the road and boat operation laws are taught along with how to react properly to emergency situations on the water. They learn the dangers involved in cold weather boating and the dangers on different types of waters such as rivers (currents) or lakes (waves).

The Boating and Water Safety Awareness Program is taught by some 300 certified instructors across the state. The course length varies depending on the instructor's resources. The recommended minimum amount of time is eight hours. This course meets the mandatory education requirements of Pennsylvania's neighboring states—Maryland and New Jersey.

Water rescue

With the recent torrential rains, the stream, though small, was out of its banks. Three young boys inflated their small rubber raft and decided to go whitewater rafting down to the bridge. The boys launched the boat in their backyard and immediately got into trouble when the raft pinned on a strainer (submerged tree). They had no life jackets. Two of the boys were swept out of the raft and were flushed downstream. Luckily they were washed into an eddy (slow water) next to shore.

The third boy was stranded in the deflated raft pinned on the tree. The local fire department was on the scene in several minutes. Rescuers set up a safety line across the river upstream of the boy. They launched their rescue boat and tethered it to the safety line. Other rescue personnel on shore controlled the lines and directed the boat from shore. The firemen easily maneuvered their boat to the victim and pulled him into their boat.

Thanks to the Bureau of Boating's training these firemen received just several months ago, they were able to make a safe and successful rescue.

The Fish Commission's Water Rescue Course was developed for the state fire academy for use in the training of fire and rescue personnel. However, this course is also used in the water rescue training of police and park personnel. In addition to being credited for saving lives, the Commission's program has also received national recognition and was recently adopted for implementation by the National Association for Search and Rescue.

The purpose of this program is to train water rescue personnel in the most current techniques of boat rescue and water safety. The basic intentions of the course are to familiarize the rescuer with the proper procedures used in basic water safety and safe boat handling, to have the rescuer demonstrate a proficiency in water rescue relative to individual capabilities, and to give the rescuer a greater sense of competency in dealing with on-the-water emergencies.

The program is divided into three phrases with an overall introduction. Each phase covers a particular level of water rescue. Phase I provides an overview of planning, personal safety and shore-based rescue operations. Phase II orients the students to boat handling and boat rescues. Phase III involves special rescue situations such as low-head dams, in-water rescues, line systems and cold water survival.

Aids to navigation

Unlike the roads and highways we drive on, the waterways in Pennsylvania do not have road signs that tell our location, the route or distance to a destination, or of the hazards along our way. Instead, waterways have aids to navigation, which include buoys, lights, markers, and signs. This is known as the Uniform State Waterway Marking System and is designed to satisfy the needs of all small vessels.

With the increased number of boats on our waterways, more emphasis has been put on the awareness of floating aids and



PA Fish Commission photo

Virgil Chambers (left) teaches a part of the Commission's water rescue course in the relatively safe confines of a swimming pool.



Dan Martin

their messages. The Boating Safety and Education Division manages over 1,400 aids to navigation across the state. They coordinate the installation, tracking and maintenance of these aids in cooperation with other agencies such as the Department of Environmental Resources, U.S. Army

Corp of Engineers and the U.S. Coast Guard Auxiliary. In addition to these aids, an additional 280 private aids to navigation permits have been issued for ski ramps, slalom courses, swim docks and mooring areas.

Capacity plates

Capacity plates are required to be permanently affixed to every monohull boat less than 20 feet in length designed to carry two or more persons and propelled by machinery or oars as its principal source of power if the boat is operated on any waters of the Commonwealth. Canoes, sailboats, kayaks, inflatables, hydroplanes and boats considered by the Commission to be of unusual of unique design, such as sneak boats and thrill craft, are exempt.

The number of capacity plates issued has increased considerably. It is hoped with the boater complying with this new regulation, accidents attributed to overloading and overpowering will decrease.



PA Fish Commission photo

Publications

Many single subject pamphlets are available in small and large quantities. The information within the pamphlet is updated as needed and new publications are continually being added. Much of this free information is available through state parks, marinas, clubs, training schools and the regional Fish Commission offices. Here is a description of the most popular publications.

- Anglers Know Your Limits. The brochure describes hazards of which the sportsmen need to be aware. Some of the topics include: low-head dams, cold water, anchoring and accident prevention.
- Boat Trailering. Topics covered include selection of trailers, maintenance, launching, retrieving, registration and a safety checklist.
- Canoe Safety. This includes basic nomenclature, preparation for trips, safety rules, resources available for skill training and the international scale of river difficulty.
- I Just Bought A Boat, Now What Do I Do? This brochure is for the new boat owner and answers the most commonly asked boating education and registration questions.

• Marine Fire Extinguishers. Topics include clarification of the law, fire preventions, emergency procedures and classes of fires.

• Personal Flotation Devices. This brochure illustrates different types of PFDs, addresses proper procedures for usage, covers the law and addresses other safety tips.

• Sailing in Pennsylvania. Topics include rules of the road, theory of sailing, righting a capsized sailboat, clarification of the law and safety suggestions.

• Survival in Cold Water. This includes an explanation of the ill effects of cold water on the body, survival skills, prevention tips and first aid procedures.

• Uniform State Waterway Regulatory Markers Decal. Illustrates and explains the most common buoys on state waters.

• Water Skiing in Pennsylvania. This brochure clarifies water skiing laws, hand signals, has a sunset/sunrise chart,

meridian map and lists water skiing safety precautions.

Boating accidents

The Pennsylvania Fish Commission has the responsibility for monitoring all recreational boating accidents reporting property damage over \$200, personal injury requiring medical treatment or death or disappearance. An accident review officer reviews all such boating accident reports to determine where additional educational emphasis needs to be placed. Copies of all "reportable" boating accidents are sent to the U.S. Coast Guard. Often this section's educational programs and efforts are directly related to past accidents.

Agency cooperation

The staff also provides an assortment of boating and water safety training programs to the waterways conservation officers, deputies and fisheries personnel. This section also provides programs for the Bureau of State Parks, Pennsylvania Game Commission, U.S. Fish and Wildlife Service, U.S. Army Corp of Engineers, American Red Cross and other state and national agencies.

A staff liaison works closely with the U.S. Coast Guard Auxiliary and U.S. Power Squadrons to coordinate boating safety efforts through public classes, safety patrols and publications. The main empha-

sis of the liaison is to assist these volunteer organizations in teaching boating safety to the general public. The vast majority of the adult boating education in the Commonwealth is taught by members of the U.S. Coast Guard Auxiliary and U.S. Power Squadrons.

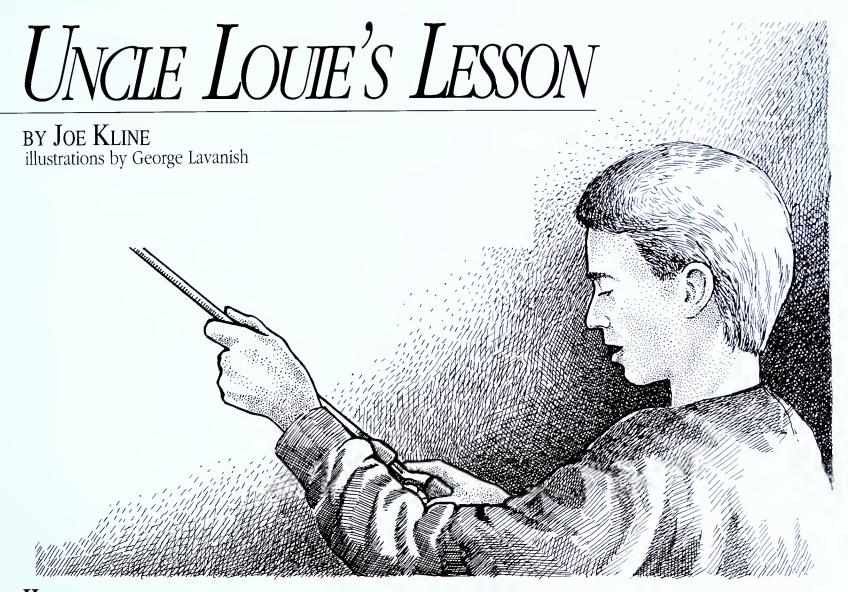
Boating Safety and Education Division

Boating in the Commonwealth has been increasing at a steady rate. Twenty years ago when this section came into existence, there were 106,230 registered boats. At the end of 1989, there were 278,535 registered boats and the number for 1990 is still increasing. Twenty years ago, a boating manual and some public education courses were offered. Today the division has expanded to provide a certified boating and water safety awareness program and a water rescue course. An aids to navigation and capacity plate program are in full swing. A variety of boating publications are available. Boating accidents are closely monitored to predict future boating safety trends. Support is also given to other agencies through programs or materials. As boating continues to grow at a steady rate, our division's responsibilities must also continue to grow to support the Commonwealth boaters.



Art Michaels

Boating Safety and Education Division personnel include (left to right) Cheryl Kimerline Hornung, Fred Menke, Dan Martin, Bureau of Boating Director John Simmons, and Virgil Chambers.



How I hated that newspaper route. But the money I earned from it was my only hope to get a real fishing outfit—a finely crafted rod, like those in the Sears, Roebuck and Heddon and South Bend ads. I wanted to replace whippy saplings cut from shrubs near the water's edge. I wanted a longer substitute for the 30-foot hunk of thick, black braided line knotted to the end of it. I wanted a real reel, an alternative to my cigarbox tacklebox. Perhaps I'd even get a packet of new Carlisle hooks, rust-free with sharp points not blunted and bent from yanking them too many times off underwater snags and across sharp-edged rocks.

Surely, I thought, a young fisherman like me who enthusiastically read and studied over and over every fishing story in the second-hand issues of *Fur-Fish-Game* bought for five cents, who already was able to out-fish his teacher, who was convinced he would become a great fisherman, deserved better than gear just a short step up from that used by Huck Finn.

Fishing was my passion, my life's ambition. It was a 13-year-old's dream and the beginning of a search for angling excellence.

Hadn't I already earned the Boy Scout angling merit badge? It was the first one I tried for and the requirements were easy for me, further proof in my young mind that fishing was my destiny. I looked forward to the years ahead: Casting a line in the world's most prestigious waters, astonishing my fellow anglers with the large sizes and numbers of fish I hooked where others had failed. How I would savor their envy. The expressions on their faces would not mask it.

But I knew that sapling rods, no reel at all, and rusty, dull hooks tied to the end of a short, stout length of line suspended

below an egg-sized wood float wouldn't serve me well in my ambitious pursuit.

Times were lean back then. The country was coming out of the Great Depression. Jobs were still scarce and families tended to include lots of brothers and sisters. In most, like mine, there was little money left at the end of the month to squander on unthinkable extravagances like a fishing rod and reel—even the cheapest.

I knew better than to ask. Money must go to more important things like trolley fare, Fels-Naptha soap, a new pair of winter galoshes, my sister's dumb, dollar-a-week tap dancing lessons, to Mr. Dinkel, the butcher, new soles and heels on badly worn shoes and some to Mr. Stark for the three-ton load of coal he dumped at the side of the house last week.

It might have been different if my father had been a fisherman, but he wasn't. Instead, he eagerly looked forward to spending every Saturday afternoon in the basement of Saint Mary's Grade School. Behind locked doors, the men of the parish had installed a two-lane bowling alley, a bar and lots of card tables. They called it "The Lyceum." He and his friends happily passed the hours there until it was time to leave for home and supper. After a week of long, mindless work at the office, tediously going over row after row of accounting figures and dutifully entering them in dusty ledger books, it was his way of relaxing with men he grew up with, men he had sat with in the Saint Mary's classroom one floor above.

He invited me along and I went a few times. But spending a Saturday afternoon, even a rainy one, in the dim, smoke-filled Saint Mary's basement wasn't appealing. There was little else to do but watch him and his friends knock over duck pins,

The time for dreaming was over.

Now I was about to take my first step
as a famous fisherman-in-training,
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listen to them regale one another endlessly with stories about growing up in the city of Allegheny on Pittsburgh's lower north side in the good old days, play spirited games of nickel-and-dime pinochle and order their tall mugs refilled again with beer. I was out of place there and I guess we both knew it. It wasn't my idea of fun.

But catching fish was. Any fish, large or small, brown, yellow, green, it didn't matter. A carp ranked as high as a bass. A perch was equal to a catfish. A fish is a fish, I reasoned, and the more, the better.

My Uncle Louie introduced me to fishing. You know the kind. Everybody should have an uncle like him—easy-going, infinitely obliging, friendly Uncle Louie. He let me tag along. He was my teacher. Uncle Louie was a janitor, probably at the lowest end of any pay scale back in those days, so his search for fun was limited by the few extra unclaimed coins in his coverall pocket.

He was always ready to swap a broom handle for a fishing rod. He did have a real fishing outfit, though, but not much of one. His rod was bare steel, like most back then, with only the slightest suggestion of a taper and guides wrapped with thick maroon thread, some of it dangling loose. Its plain cork handle was round and pitted, missing a chunk of cork. The rod was a South Bend, I think. Looking back now, it was uniformly stiff, ugly and cheap. Having one just like it was my dream.

During our early outings, his reel was the simplest affair imaginable. It didn't even have a levelwind. Somewhere along the way, it was replaced by one with chrome-plate pillars, green plastic sideplates, an angry loud click drag that I was sure even the fish could hear, and a levelwind. To me, it was the ultimate.

I'll always remember his ear-to-ear grin and delight when his bobber was pulled under and he reeled in a fish struggling and splashing to the brash accompaniment of the screaming click drag—which for some reason, he never disengaged. Nor will I ever forget his constant scolding. "Keep your line out there. Don't be pulling it in all the time." His impatience with me matched mine to check the worm one more time, to slide the bobber down six more inches, to throw out my line again a little farther to the left where I was sure a hungry fish was lurking. I used any excuse to break up the monotony of nothing to do except keeping eyes fixed on a maddening, serenely floating bobber.

In spite of what appeared to me to be fine fishing equipment and his years of fishing experience, Uncle Louis spent a lot of time picking out a bird's nest after so many of his flailing, side-arm casts. He never minded. I, on the other hand, was never bothered by a bird's nest. For me, getting the line out was as uncomplicated as whirling the line, bobber and baited

hook in ever faster circles and then heaving out the whole affair with all the power my skinny arms could manage. As simple as it was, however, I too had a casting problem. Mine was watching the line in disgust straighten out, stop in midair and seeing the worm sail off the hook and plop yards beyond my bobber. "Another free meal," I always thought. And it just increased my determination some way, someday to have a fishing outfit as grand as Uncle Louie's.

That's how the paper route came about. If I were ever to achieve my quest for fishing excellence, if I were to fulfill my destiny to become a world-class angler and travel to far-off legendary waters, I must begin preparing now by getting a rod and reel like Uncle Louie's.

Herky Heckler's paper route was the only money-making opportunity open to me. Herky was a neighborhood chum and the paper boy in our small, 47-family, mostly German-American community and he was growing tired of the job. He often complained about it to me. I wasn't thrilled about delivering newspapers because I knew it was the reason Herky never showed up at our afterschool mushball games. I promised myself as soon as I saved enough money to afford a fishing outfit like Uncle Louie's, I would dump the route on someone else.

So one day while walking home together from school, I volunteered to take it over. He quickly agreed.

My parents had no objection to my business undertaking. Schooled in such matters, my father, the bookkeeper, lectured me on the importance of keeping customer accounts up to date and accurate, as well as the need for prompt collections and payment of money owed. He further suggested not lavishing my profits on Fleer's bubblegum baseball cards, penny candy, Pepsi-Colas, Eskimo Pies and other delights available to a young entrepreneur with money in his jeans. I assured him wages from the business would be studiously saved, already intended for a fishing outfit like Uncle Louie's. Although there were a few instances of fiscal backsliding, for the most part, they were dedicated funds.

Herky said the route would earn me about \$1.20 a week. A week! \$1.20 a week! It was a cache of money I could hardly comprehend. Never before had I that much to spend on whatever I wanted. Although I had no idea what Uncle Louie's rod and reel cost, surely one like it would be in my hands in a few months.

The time for dreaming was over. Now I was about to take my first step as a famous fisherman-in-training, equipped with gear to meet every angling challenge in the years ahead.

Heeding my father's advice, I bought a yellow-paged, lined Goldenrod essay book like that used in school for homework assignments, and I carefully recorded customers' names with room off to the side to enter weekly payments. The books were set up. My father approved. My mother gave me a round cookie tin to hold my profits. Preparations for the business were in place, except for one nagging detail.

Perhaps, I thought, it would be a good idea to learn more about the kinds of rods and recls available. Maybe I would need something just a little better than Uncle Louie's because he never fished farther than 25 miles from his home on Troy Hill. I, on the other hand, would travel the world searching for ever more difficult and demanding fishing adventures. Yes, I should definitely consider something superior. Why not? Earning \$1.20 a week, I could afford it.

So I mailed penny postcards requesting free catalogs from firms like South Bend, Pfleuger, Heddon—all the giants in the fishing tackle world. I eagerly awaited their wishbooks from which to make my rod and reel selections.

The following Monday, Herky introduced me as the new paperboy to the *Pittsburgh Press* route manager. I was in business!

Quickly my initial enthusiasm was replaced by a sense of weary work. Seven days a week I slopped through spring slush and rain, sweated and straggled through the hot days of summer, never once noticed the trees in their new bright colors on crisp fall afternoons and mushed through winter snowdrifts on streets and avenues untouched by city snowplows. Forty-seven deliveries, day in and day out. I missed the regular afternoon mushball games and even a few times I had to pass up fishing trips watching Uncle Louie picking out a bird's nest.

Whenever I plodded past the ballfield on my rounds, weighted down with a load of the latest editions, Herky never failed to taunt me with "How's the route, paperboy?" from his usual second base position. My only answer was a silent, grim grin.

Still, as each week passed, my hoard of dollar bills and carefully counted rolls of coins grew. I filled page after page in the Goldenrod ledger book with checkmarks to record customer payments received, route manager payments made and wages left over for me. But oh, how I began to dread coming home each day from school and seeing neatly stacked on my front porch 47 copies of the *Pittsburgh Press*.

Happily, my customers—Fahrion, Kleinapfle, Stouff, Feistneuer, Schmidt, all of them—paid on time and in full. However, there was never an extra nickel tip for me in appreciation for the diligent care I took with their papers, slipping them under porch mats to protect them from blowing away on windy days and keeping them from getting soaked when it rained by safely tucking them behind storm doors. And never once did I toss a tightly folded newspaper onto a porch roof.

Meanwhile, the catalogs had arrived with pages filled with temptations. Rods. Not fishing rods at all if the catalog copy were to be believed, but magic wands sensitive enough to let me feel the slightest nibble, to cast never-before-possible distances with a simple wrist flick. There were wonderful reels that with proper spool adjustment would make my every cast thumbless with never a bird's nest, in a dizzying selection of makes and models. I never dreamed the variety to choose from. It only confirmed my suspicion: I should aim for something a little better than what Uncle Louie had. After all, didn't I tramp through drenching rains, freezing snowstorms, miss every afternoon mushball game and endure Herky's heckling to earn the money? But the more I paged through the catalogs, the more bewildered I became. Settling on the perfect gear would be difficult.

At last the time came to go fishing tackle shopping. I was sure my stash of money, so frugally stockpiled for over a year, was more than enough to allow me practically any extravagance. I was prepared to spend it all, down to the last penny. But after all the months poring over the now dog-eared catalogs, I still hadn't settled on the rod and reel of my dream outfit. With so many choices, I remained confused.

Well, I thought, the only solution was to see them for myself



at the W. S. Brown Company, purveyors of fine sporting goods—Pittsburgh's Abercrombie and Fitch. I would have to count on the help of the experienced salespeople there to steer me through my dilemma. Or maybe ask Unclc Louie to come along. No, I thought, I earned the money myself and I would spend it myself.

On a blustery Saturday early in March, I rushed through the deliveries with unaccustomed enthusiasm, hardly touched supper, emptied the tin cookie can, pocketed my wages and hurried down the hill to catch a #10 West View trolley for the trip to town. Shivering in anticipation and the cold night air, I anxiously watched around the bend for its arrival. Finally it came clamoring along the track. Finding a scat, I was barely able to control my excitement. This was it! I was about to become the owner of real fishing tackle.

The bell over the W. S. Brown Company's front door jingled as I entered. I had never been there before, Inside, lining the single, narrow aisle, were cases of reels. Little sparkles of light reflected off their polished, silvery sideplates, handles and levelwinds. Rows of rods were mounted on pegs beside the counters. Lures I had only seen in catalogs—Arbogast Jitterbugs and Hula Poppers, Heddon River Runts, South Bend Bass-Orenos and Creek Chub Wounded Minnows and many I didn't recognize—were arranged in a parade of sizes and colors. I felt giddy; my knees trembled.

The one clerk on duty looked up from whatever he was doing and stepped forward. "I want to buy a good fishing rod and reel," I said in a nervous, squeaky voice. He scleeted a low-priced reel, an equally inexpensive rod and placed them on the counter before me. I couldn't believe my eyes! They were almost identical to Uncle Louie's. His rod and reel, which just a few months ago seemed so grand, now paled in comparison to the magnificent ones all around me. How would my teacher feel when I showed up with an outfit surpassing his?

Momentarily feeling guilty and a little ashamed, I was tempted to overlook my resolve for something better, but I remembered all those months walking the route and I dismissed them with a scornful, "Not good enough." The clerk's eyebrows raised. He sighed and scurried off to gather more rods and reels with progressively higher price tags until the countertop was littered with them. I'm sure in his mind he questioned the ability of this brash, young smart aleck, dressed in faded jeans, scuffed shoes and a well-worn winter jacket, to afford the increasingly expensive merchandise he laid before me.

In the corner of one of the glass cases I noticed a shiny silverand-green reel the salesman had overlooked and I asked to see it. He said it was a Marhoff and opened a Shakespeare catalog to let me read about it. Every part precisioned to an accuracy of 1/1000th of an inch! Anodized aluminum head plates! Nickelsilver frame! Bushings of long-wearing phosphor bronze! The words flew off the page at me. Pivot ends, polished stainless steel! Lightweight spool! Oiling holes in spool cap and crank nut! Built like a watch! Then the clincher: "The purchaser of this reel stamps himself as a good fisherman." That settled it. I had to have it. At \$18 it would last a lifetime.

Next, a rod. I noticed it almost as soon as I walked through the door. It had a look of something special about it that caught my eye. A Tru-Temper Castmaster—sleek, six feet long, a hollow steel beauty with distinctive step-down tapers along its length. The clerk put it in my hands, saying, "This is the one all the professional tournament casters use." Wow! I whipped it back and forth a few times as I read you were supposed to do when buying a rod, felt its smooth, firm flex and instantly knew it was the rod that would go along with me on all my future fishing adventures. Another \$23.75.

The last thing left to get was line. I passed over the usual black, black-and-white and cream colors and chose instead a spool of braided, multi-colored Cortland line just because it looked nice. Only \$1.

Slowly I peeled off the dollar bills from the crumpled wad in my pocket and counted out the correct amount. I never once thought about how the money represented months walking the route and all the times my narrow shoulders ached from the heavy loads of papers held against my hip by a broad canvas strap, especially on Sundays when they were many times as thick as the dailies. I was too happy, too excited. I had taken the first step in my rite of passage.

Returning home that night on the trolley, I clutched my treasures—a long, slim package, and two smaller square ones—with a happy sense of satisfaction and accomplishment. I looked forward to Uncle Louie's next call to go fishing when I would flaunt my magnificent new rod and reel. Yet, I was strangely uncomfortable with that thought.

How would he feel about his rod and reel after that? Might he see them for the plain and humble things they were? Maybe he would never take me fishing again. I consoled myself with the notion that after my reputation as a famous fisherman was established, Uncle Louie could proudly brag to the men at the shop that he had taught me everything I knew about fishing. Yes, the scales would eventually balance. In time, there would be something in my rod and reel for Uncle Louie, too.

About a week later, the call came. We would go fishing next Saturday. On Friday night, I dug up our small backyard garden to collect my share of worms with some extras for Uncle Louie. Laying in bed that night, I decided not to call undue attention to

my rod and reel, not make a big deal out of them, just sort of mention them in passing.

Early the next morning, he pulled up in his car in front of the house, honked the horn and I trooped out to greet him. I carried the new rod still in its carrying tube and the reel inside the soft flannel pouch that came with it. "Got a new rod and reel, Uncle Louie." The hoped-for flicker of interest never came. "Nice," he said. "Just put them in the trunk and let's get going."

We parked at the usual place by the lake and walked to our favorite fishing spot along the bank. Proudly I slipped the slim, tapered castmaster from the green twill-covered tube and mounted the "precisioned to 1/1000th of an inch" Marhoff on it, all the while casting sideward glances at him, waiting for some comment. Maybe he'd ask to try a cast. "What do you think of my new rod and reel, Uncle Louie," I finally said. He looked over at me once, nodded his head at my sophisticated equipment and said, "Nice."

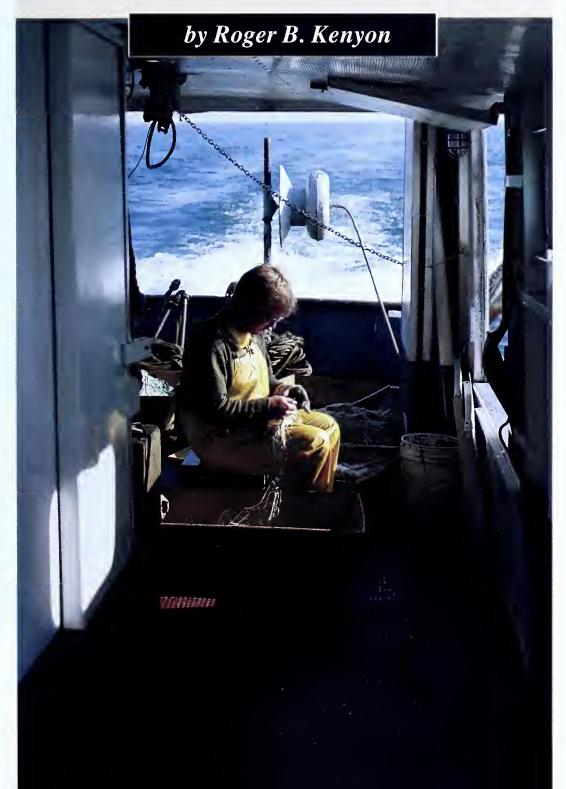
That's it? Nice? That's all? He hardly took notice of my rod and reel. He was already busy attaching an oversized red-and-white float to his line and threading a plump worm on a rusty hook. Stepping back, he made his first wild side-arm cast. The reel click drag screamed and the bobber splashed into the water. With the familiar contented grin on his face, he settled back against the thick trunk of a lakeside maple and began the first of another of our regular bobber-watching vigils. He was fishing, supremely happy just to be there. It was enough.

Against the far wall in my den today is a golden oak rack holding a dozen rods like soldiers standing at attention. Each is made from what the manufacturer says is a wondrous, costly aerospace material. They are masterpieces in the world of rod craftsmanship and design technology. The reels fixed to their handles are the finest—models unsurpassed in features, studded with push buttons and adjusting mechanisms, ball-bearing races buried inside. Missing are the now antique Castmaster and the Marhoff. They're stored somewhere in the attic—too old, too dull by today's standards.

I never achieved the fishing fame of my young, naive dreams, though I have fished some of our country's storied angling waters. Yet if you were to ask me, I would have to think hard to tell you which outfits in the rack I carried along on these trips. They are a hazy blur, lost in my memory. Not nearly as clear as the trips themselves. The excitement of traveling to new, faraway waters. The companionship of fellow anglers. Shore lunches. Watching morning mists waft off a secluded cove. Racing across a whitecapped lake trying to outrun a dark storm front sweeping in from the north—and not making it. Feet up, sipping coffee at the end of the day before a merrily dancing blaze in the stone fireplace of some remote fishing lodge. And when the fish were biting, remembering occasionally catching a few fish.

There's one more unforgettable memory in this room—one over 50 years old. It's understanding fishing's ultimate reward. I learned it from Uncle Louie on that long-ago day we spent together on the lake. He was fulfilled, at ease with his poor, ordinary rod and reel; me, searching for fulfillment, pompous and arrogant with mine. He taught me the lasting lesson of what fishing is about. Just being out there is enough. Nothing else matters all that much. Uncle Louie knew that all along.

The Lake Erie Research Unit



Pennsylvanians have direct access to one of the world's most productive freshwater fisheries. Along with the citizens of Michigan, Ohio, Ontario and New York, Pennsylvania maintains a stewardship of a resource that annually produces an average of 65 million pounds of commercial and sport-caught Lake Erie fish. A biologically complex ecosystem, Lake Erie supports fish stocks that recognize no political boundaries and are shared by four states and one Canadian province, further compounding the complexity of managing the resource.

To resolve fishery issues that inevitably emerge from this perplexity, representatives from respective governments and advisory bodies frequently meet to prepare strategies for the conservation of the lake's fishes. Using the forum of the Great Lakes Fishery Commission, biologists form specific "task groups" to address fish stock problems on a species-by-species or population-by-population basis. These tasks require the analysis of large databases to detect trends in abundance or changes in the behavior or biology of species under management and study.

All the managing authorities on Lake Erie, as well as the U.S. Fish and Wildlife Service, maintain research vessels and laboratories whose primary missions are to monitor these fish stocks and their problems. The Lake Erie Research Unit of the Fish Commission is responsible for these activities in our waters of Lake Erie.

Management foundations

What does this entail? Generally, it involves setting up seasonal surveys to examine various aspects of population biology, specifically for those species of special concern such as walleye, yellow perch, lake trout, whitefish and forage fishes. Using standard fish stock assessment gear, generally trawls and gill nets, biologists methodically fish the populations at select survey stations. The catches represent samples of the fish population distributions at given times, depths and water temperatures.

Because most of these survey stations are fixed sites, we have been sampling them since 1970. The data collected at these sites describes trends in fish abundance, distribution and other aspects of fish biology. Correlating this information with annual measurements of lake environmental conditions, fishing intensity and other features of the ecosystem provides fishery biologists with a long-term look at the reaction of fish populations to fishing pres-

sure, natural trends in abundance (are fish stocks indeed cyclical in nature?) and an ability to forecast the size and age structure of a population for the next few years.

This is the foundation of fishery management for Lake Erie fish stocks and is central to the conservation and rehabilitation of walleye, yellow perch and several other species. The Lake Erie Research Unit's dayto-day activities follow survey or stock assessment programs established to gather data routinely to service specific fish stock analysis programs.

Typical survey

A typical survey might go something like this. The autumn perch stock assessment begins in mid-September with the Perca setting and lifting gill nets at several stations at 40 to 70 feet deep. Autumn is the preferred time because perch usually have completed most of their annual growth, gonads are nearly developed for next spring's spawning, the population distribution is stable in terms of school size or shoaling, density patterns are set and most of the annual losses due to fishing and natural attrition have occurred. After the nets are retrieved, the total catch of all species is counted.

The next job on board the vessel is to begin taking vital measurements of perch, examine stomachs for food preferences and amount consumed, determine maturity state of female perch and extract scales, bone or ear stones (otoliths) from individuals of the catch to determine the age structure of the stock.

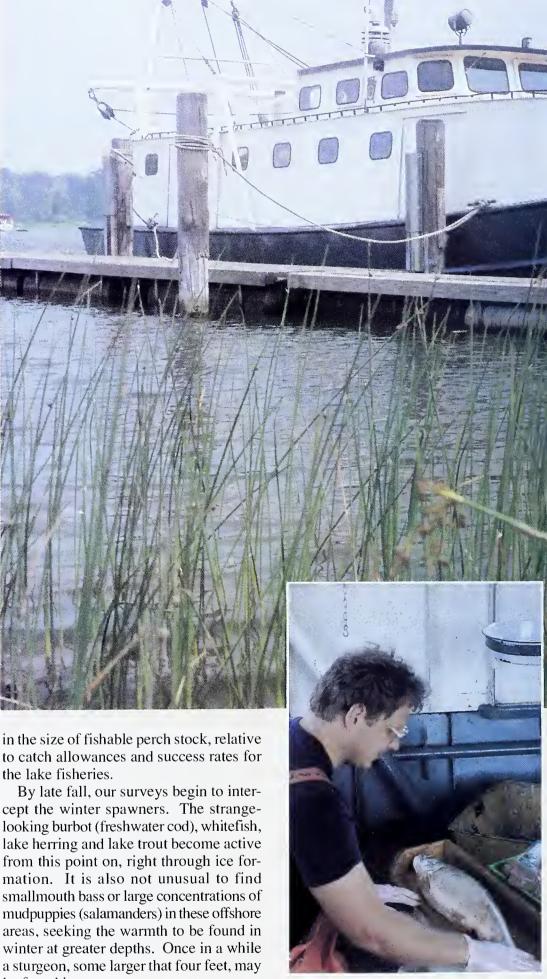
This "accounting" of the perch generally takes several hours and is repeated at different survey stations over a three-week period. Data and specimens are returned to the lab at the end of each day for analysis.

Trawl surveys

Before the snow flies and the first ice appears on the lake, the *Perca* and crew must attend to another part of perch assessment. During October and early November, trawl surveys are undertaken at select depths to assess the abundance of the youngest fishes. These smaller-size fish are found close to the bottom in late fall and are readily accessible to bottom trawling. The numbers of young-of-the-year perch (all those spawned that year) caught in trawl surveys provide an index of the abundance of that generation (year class) of perch. These annual assessments become useful predictors not only of year class size and contribution to the future population, but they also give the biologist an early view of trends in the size of fishable perch stock, relative to catch allowances and success rates for

be found in our assessment nets.

The dark, brooding, cold days of November on the lake find little boat traffic to accompany the *Perca* on its rounds.



Bob Lorantas (above) checks a Lake Erie fish aboard the Commission research vessel Perca (top photo).



Below the thermocline

These autumn days are part of the survey work started in muggy August. Lake trout assessment begins in summer, way before lake trout spawn in November. In the fall, the *Perca* is "down lake" east of Erie working the sampling gear below the thermocline where the cold (48 degrees) strata hold the lake trout.

These surveys are part of a coordinated field effort with New York state fisheries people. New York, Pennsylvania and the United States Fish and Wildlife Service are actively managing the rehabilitation of this once-native species of Lake Erie. During the surveys it is possible for biologists to examine many lake trout to determine progress toward stock rehabilitation. These deepwater predators require ample forage

Port captain Paul Atkinson (top photo) maintains survey equipment for use on the Perca. Lake Erie Research Unit biologists study a sea lamprey (above) to determine the success of control measures.

and space for maximum potential for survival and expansion. Their requirements, in terms of temperature, oxygen and spawning habitats, are also restrictive and because they are late-maturing and slow-growing animals, they are vulnerable to excessive fishing mortality.

Annual assessment surveys provide biologists information on the lake trout's preferred distribution relative to habitat, schools of forage, mortality rates, longevity (which genetic strain of lake trout is adapting

to Lake Erie), maturity rate and overall wellbeing and condition.

Sea lamprey

One threat to the return of lake trout in Lake Erie has been the insidious activity of sea lamprey. Lakers are vulnerable to lamprey attacks. The body wounds imparted by the predator are fatal to most trout. To remove this factor in the rehabilitation equation, control of lamprey in Lake Erie has been under way since 1986. Much of the assessment of the success of this control is the responsibility of the Lake Erie Research Unit.

During the spring, field biologists trap lampreys as they ascend lake tributaries to spawn. Summer stream surveys, using specialized electrofishing gear, permit estimates of juvenile lamprey survival. The lower densities of lamprey in the stream and the drastic reduction in the frequency of wounded trout attests to the remedial level of lamprey control. However, recolonization of young lamprey has been noticed, and the control agents of the U.S. Fish and Wildlife Service plan to return to execute further treatment where lamprey have been detected.

Gales of November

The survey year comes to an abrupt close when the gales of November sweep down from the north. The *Perca* goes to dry dock until spring when walleye surveys are scheduled to begin. Field staff return to the lab and office, where lake trout wire tags are decoded, scales and bones are "read" to age perch and whitefish, data is put into computer files and a number of other tasks are undertaken. Stock analyses are prepared and interagency task group meetings with our colleagues around Lake Erie are under way by mid-winter.

If everything goes according to schedule, all concerned will know the present state of the fish stock and fisheries and what future problems can be anticipated.

For Lake Erie, this is how basic survey data is translated into corrective management. If we have learned anything at all over the past 20 years on the lake, it's that Lake Erie's fish populations are productive, but this is tempered by their sensitivity to habitat, environmental changes and overfishing. The long-term conservation of Lake Erie's fishery resource demands that we pay attention to these facts.

Fisheries Biologist Roger B. Kenyon is chief of the Commission Lake Erie Research Unit.



Heating up Frozen Walleye

by Paul M. Liikala

The rising sun peeked over the eastern horizon. The bright solar rays made the snowdrifts appear golden. It certainly was a beautiful winter morning, and I was eager to tangle with some fat and sassy walleye. This was my first experience at ice fishing for marble-eyes, and my expectations were boundless.

Off in the distance was a group of anglers. Not knowing where to start, I and my partner Jake headed toward them. As we neared the fishermen, they appeared to be doing some bizarre snow ritual. They dropped their rod tips in the frigid water and then ripped them skyward. The bowed poles stopped at 11 o'clock. When the rod's bend straightened out, they pointed the pole down. They repeated these moves as if they were angling maestros conducting ice fishing orchestras.

We spudded two holes and lowered our jigs and minnows. While we went fishless, the animated ice anglers were pulling out walleye. Unable to stand it, I walked over to an angler who had just landed a fish. A nice 16-inch walleye lay flopping on the ice, with a red-and-white Sonar firmly implanted in its jaw. It didn't seem possible that the coldblooded fish would strike an artificial in near-freezing water. However, the proof was on the ice.

This took place 15 years ago, and it started my love for iced walleye. The successful anglers used 3/8- and 1/2-ounce Sonars. They were unbaited and attached to a round nose snap without a swivel. Eight- and 10-pound-test clear line on short spinning rods completed the outfits.

Standard method

The standard method for this style of fishing is to lower the lure until it touches the bottom. The slack is picked up until the rod's eye is about a foot above the water. In the old days, anglers jerked the pole skyward until the tip was four to five feet above the angler's head. This high rip method takes fish, but many veterans have reduced the lift. Now, they lower the pole just above the water and snap the wrist upward until the tip has moved about three feet. Then they let the lure descend on a tight line. It is critical that the Sonar is not allowed to free-fall because fish often hit it on the drop. The minute the monofilament twitches or stops falling, they rip the rod tip skyward.

If the walleye grabs it on the lift, your reflexes will set the hook. When fighting the fish, keep firm tension on the line. As the fish nears the hole, don't rush it. The walleye fights like crazy to avoid coming through the opening, especially if the ice is snow-covered. Once its head is visible, either gaff the fish or lift it out.

My favorite Sonar colors include red and white, chartreuse, perch, black, silver and gold. Other productive vertical vibrating lures are Gay Blades, Silver Luckies and Jigging Rapalas. The preferred sizes are 3/8- to 1/2-ounce.

These lures work on coldwater walleye because they dart, flutter and just plain aggravate the fish. By working these

artificials up and down in front of the fish's nose, the walleye often hit out of frustration.

On certain days the walleye want a little meat. To the round snap clip on a Swedish Pimple, Little Cleo or Hopkins spoon. Two- to three-inch models are best. Silver, gold, white, green and chartreuse colors are consistent producers.

Head-hook two or three minnows to the rear treble and lower this offering to the bottom. Crank up the slack and gently roll your wrist so the lure moves only a foot or two off the bottom.

If you snap the rod too hard, the baitfish get ripped off. When using Swedish Pimples, make certain to add the plastic flippers that come with the lure. Attach them to the rear split ring and snap going through the hook's eye. On certain days, these can spell the difference between success and failure.

Keep jigging up and down so that the lure rises and falls about four to six inches. Start working it just above the bottom. Usually, inland walleye don't suspend in the winter. Continue this motion for several minutes. If no strikes occur, bounce the bait on the bottom a few times before lifting. At other times, let the bait sit on the bottom for a minute or two before jigging it.

Dancing

Another effective method is to work the lure up and down so firmly that the line makes a twanging sound. The bait should be bouncing just a few inches. When doing this maneuver, make certain to hook the minnow through the bony head plate.

While the lure is dancing, slowly raise it a foot off the bottom. Keep jigging at this level for a minute or two. If no strikes occur, keep bouncing and lift to two feet. Stop raising, but keep dancing it hard. Wait a minute and jig up to three feet. To lower, slowly drop and bounce the lure.

This maneuver is effective on those days when the fish are hitting slowly. A portable flasher unit really makes this method super-productive. On the screen you can see the walleye looking at the bait. When this occurs, bounce the lure harder. If a fish doesn't hit, jig and raise the bait.

By being able to see the fish, you work extra hard at enticing the walleye. The results can be impressive. The flasher units are best because some of the LCDs seem unable to mark these fish.

Tip-ups

If you want an exciting style of fishing that lets you cover a lot of water, give tip-ups a try. You're allowed to set five of these devices over a variety of good-looking spots. Some anglers like to fish one rod while scattering four tip-ups. When using tip-ups and rods and reels, a combination of five can be used, but the maximum number of fishing poles is two.

When purchasing tip-ups, buy the type whose reel is underwater. On these models the spool doesn't freeze in super-cold water. Choose a line that is easy to handle such as 20- or 30-pound-test braided dacron or fly line. A three- to four-foot leader of eight- to 12-pound test is tied to a size six treble.

There are those who prefer single hooks. I use a treble because you don't have to let the fish run with the bait. When the flag signals a pick up, carefully gather in the line. When you feel weight, slam the hook home. Place a small splitshot 12 inches above the treble. Hook a two- to three-inch baitfish in front of the dorsal. If only small minnows are available, liphook one on each of the treble hooks.

More than walleye

Fish warily because more than a walleye might grab the offering. One day an angler's tip-up flag signaled a strike. He ran to it and lifted his arm and set the hook. His hand stopped dead about two feet about the ice. Then his arm actually started moving down. Quickly he released the line because he had hooked a monster. As the battle continued. a crowd gathered

to offer encouragement and advice. After about 10 minutes the shape of a huge musky passed beneath the hole. Even though the fish was tiring, it had enough strength to avoid having its head pulled through the ice. The angler fought the fish expertly. The hook was in the side of the fish's

mouth and the monofilament leader had avoided the sharp teeth.

At least, that was the case until the musky's back touched the ice. The big fish twisted and turned, and the line went slack. The leader was severed right above the hook. Either the gill rakers or the teeth ended a memorable battle.

When fishing for walleye in pike or musky waters, some ice fishermen like to add a 12-inch black wire leader. This cuts down on some of the marble-eye strikes, but it gives the tip-up angler a chance to land a toothy monster.

Whether fishing tip-ups or rods and reels, the lake's most consistent sections have points or humps that quickly drop into creek channels or deep water. On a reservoir the section from the mid-lake to the dam is generally the best area. On a point, if the walleye are lying deep, they will move to the shallows and feed during low light conditions.

Early ice

On all lakes, early ice is the best time to fish. Of course, be careful so you don't fall through thin ice. For a variety of reasons, a lake does not always freeze uniformly. Therefore, follow the tracks of anglers who preceded you. Also, never travel alone, but when walking in a group space yourself. Some hard-water fishermen jab the ice with a spud bar as they walk. Carry a 25- to 30-foot piece of safety rope, too.

However, if you're sensible, the walleye fishing at first ice is definitely worth getting out early. This applies to both deep and shallow lakes. If undecided which lake to hit at early ice,

choose one that had walleye action in late fall. This indicates a good population of fish, which should keep feeding during the winter months.

Paul M. Liikala

As the season progresses, the action on the shallow lakes tends to slow. When ice fishing from midwinter to the end of the season, select deep lakes. At this time, fish both deep and shallow water structure.

Traditional walleye areas such as points, humps and roadbeds hold fish, but some lakes have few, if any, of these

features. If walleye have been stocked in structureless water, check out a topographical map for stump fields in waters 10 to 40 feet deep. The 'eyes get right among the roots, and the properly presented bait can produce some nice fish. Of

course, these areas are going to snag a fair number of lures. If an artificial gets hung up, be careful to position the next lure just above the stump. If another snag occurs, drill a hole three feet away to miss the submerged wood.

One word of advice when augering holes: Don't just make one. Drill several in the area. When the fish are spooky, it takes a while for them to calm down after holes are cut. By doing it all at once, you can quietly fish several different spots. Do not spend more than one hour at an unproductive hole.

The best times for walleye ice fishing are during low light conditions. Early morning and late evening hours are the most consistent. However, if it is cloudy, fish may hit all day long. When the weather has been stable for three or more days, the fishing usually is productive. Yet, when a storm is moving in, several hours before it hits the action can be fast and furious.

This year if you seek a cure for cabin fever, why not rid the cold of winter by heating up frozen walleye?





Anglers Currents

Trout/Salmon Stamp Effective January 1, 1991

Pennsylvania's trout/salmon stamp will become effective January 1, 1991. Anglers will need a \$5 stamp to take, kill or possess trout or salmon beginning next year. The stamps may be purchased from the same dealers and offices that sell fishing licenses. A 50-cent issuing agent fee will be charged for each stamp purchased.

The Fish Commission expects about 600,000 anglers to purchase the stamps and affix them to their 1991 fishing licenses before

fishing for trout or salmon in Pennsylvania waters. The Commission also hopes that collectors will purchase the colorful stamps depicting Pennsylvania's state fish, the brook trout.

The limited edition prints offered for sale are an added bonus for collectors. Several special editions include medallions, stamps, remarques, and even hand-tied flies. These items are available



Art Michaels

from Fly Fisherman's Gallery, P.O. Box 330, Ennis, MT 59729. The telephone number is (406) 682-4599.

The Fish Commission will receive royalties from the sale of the prints, which will be used along with stamp revenues for fish propagation, renovation of hatcheries, fisheries habitat and other coldwater programs.

125th Anniversary Calendar

On March 30, 1866, Governor Andrew Curtin signed an act that provided for the first Commissioner of Fisheries to look into restoring "runs of migratory fishes to the Susquehanna River." Such was the beginning of the Pennsylvania Fish Commission.

To celebrate our 125th birthday, the Fish Commission is offering an Anniversary Calendar, which traces the history of the Commission and provides current information for fishing and boating the Commonwealth in 1991.

This full-color, high-quality calendar has interesting historical tidbits; fishing and boating tips; natural history notes on fish, amphibians and reptiles; beautiful photos of Pennsylvania scenes and pictures from the past; important dates for season openings; and other information you can use throughout the year.

You pay only \$5 for this beautiful calendar. Use it at home or at the office or give it as a gift to your favorite angler or boater.

Order now by sending \$5 per calendar to: Pennsylvania Fish Commission Calendar, P.O. Box 1673, Harrisburg, PA 17105-1673. Please use a check or money order made payable to *Pennsylvania Fish Commission*.

U.S. Coast Guard Offers Consumers Information and Assistance

The consumer affairs staff of the U.S. Coast Guard provides a central point of contact for consumers or users of Coast Guard services who have questions or complaints concerning Coast Guard programs and policies.

The consumer staff produces and distributes information on Coast Guard activities and policies through press releases, media articles, a newsletter called the Boating Safety Circular, and a series of Coast Guard consumer fact sheets.

For additional information on U.S. Coast Guard programs, call

or write the Commandant (G-NAB-5), U.S. Coast Guard, 2100 Second Street, SW, Washington, DC. 20593. The phone number is 800-368-5647.

Answers to "Kids Page"					
Answers to "Kids F 1. C 2. ice auger 3. A 4. magnet 5. C 6. ice scoop	Page" 8. keep minnows from escaping, keep water in the bucket from freezing 9. minnow 10. A				
7. foam, metal and plastic	11. A 12. B				

ANGLERS CURRENTS

Notice to Subscribers

Act 1982-88 provides that certain records of the Pennsylvania Fish Commission are not public records for purposes of the Right-to-Know Law. This means that the Fish Commission can place appropriate conditions on the release of such records. The Commission has decided to make the subscriber list for Pennsylvania Angler available to statewide nonprofit, nonpartisan fishing, boating, and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do NOT want your name and address included on the subscriber mailing list to be made available to the described organizations, you MUST notify the Commission in writing before January 1, 1991. Send a postcard or letter stating, "Please exclude my name and address from Pennsylvania Angler's subscriber mailing list." Send these notifications to Art Michaels, Editor, Pennsylvania Angler, P.O. Box 1673, Harrisburg, PA 17105-1673.

PENNSYLVANIA

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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Angler's Notebook by Chris Dolnack

Have your ice auger blades sharpened now before the early season rush. If your auger has removable blades, consider purchasing an extra set for a quick on-ice change.

A short-handled gaff is a help for landing big walleye, northern pike and muskellunge through the ice.

Try using minnows in the two- to three-inch range with your tip-ups. Walleye, bass and pickerel readily hit baitfish this size. So will jumbo yellow perch.

First ice often offers the best fishing of the season, but use caution before venturing forth. Experts agree that anything less than four inches of ice is chancy at best. Drill a test hole close to shore to check ice thickness. Early-season ice thickness varies in different areas of the lake, depending on the wind direction and wave action before freeze-

Replace the old line on your tip-ups and ice rods. Braided dacron of 15- to 30-pound-test is ideal for tip-ups because it offers easier handling, superior abrasion resistance and less stretch—a real help when setting the hook. Tie in a two- to threefoot-long leader and you're in business. For jigging rods, four-pound test is a good all-around choice for panfish with six-pound for gamefish.

Foam-lined minnow buckets are best for ice fishing. The foam "breathes" and prevents the water from freezing. Choose a bucket with a metal or plastic sheathing—the bottom of more than one foam bucket has frozen fast to the ice. When pulled from the ice, bare foam has a tendency to tear metal or molded plastic does not.

Introduce some lake water into your minnow bucket when you start fishing. Your bait becomes better acclimated to the lake water, reducing the incidence of shock. To keep baitfish overnight, gradually fill the bucket with lake water before leaving for the day and use an aerator that evening.

Boating safety classes will soon start in many areas of the state. Contact your local Coast Guard Auxiliary flotilla for registration information. The number is in the phone book. In addition, the Coast Guard Hotline can give you information on where boating classes are held in your area. The number is 1-800-368-5647.

Fishing licenses for 1991 are on sale now and make excellent stocking-stuffers. The license year runs January 1 through December 31.



illustration- George Lavanish

On the Water Ou the Mater

with Dave Wolf

The icy winds drive the fluffy snow over a lake of crystal. In the valley the snow has accumulated, but the lake is as if someone has swept it clean with a broom. Fishermen huddle there; tip-ups don red flags as if in celebration of Christmas.

For many the season has past, although I understand that some are still probing Erie's shoreline for the occasional steelhead, while others cast to the limestone spring streams that never freeze. Still others are fishing the spillways of the larger dams across the state and some are casting to warmwater discharges from powerplants located on some of our larger rivers.

I add another piece of oak to the fireplace and use the poker to position it properly. Then I move back to my desk and the assortment of feathers and hooks that awaits me. I am tying flies for the season to come: Cahills and hendricksons and blue quills mostly, and flies that might catch shad this coming spring. I concoct new bass patterns as well and the hours pass quickly. My wife is Christmas shopping and I have had my fill of malls and brightly colored packaging and Christmas music that seems to come from every speaker.

It's overkill in my opinion—too much hoopla, for someone who likes solitude and the deafening quiet that a new snowfall brings.

For me another season has past, one full of good memories.

Days on lakes and streams that passed far to quickly. I know that yet another season lies ahead and that our natural resources will be asked once again to fulfill every angler's dream. As an employee of the Fish Commission, I ponder such things and I wonder if we can meet the wants and desires of all those who toss a line to the still or moving waters. Nature is only gently guided by those of us who work for the Commission or any other wildlife agency. Nature can never be controlled. Nature can and often does do its own thing, much to the dismay of many who would rather control it entirely.

Control may be too strong of a word. Predict what it might do may be a better one, more appropriate and more fitting. Most of us would like to have good year classes of all species of fish, which means a good spawning season. But nature has a way of destroying the best plans. Still we try, all in our small way to give the angling and boating public exactly what it desires.

If we have met your needs, we have done our jobs; if not, we need to improve within the realization that you cannot keep everyone happy all the time. Budget constraints, manpower and mother nature do put restraints on all of us here, but I am honestly proud to be part of such a hard-working agency that offers so much for so little. And with the support and advice of anglers and boaters everywhere we will continue to improve.

Perhaps because of the holiday season I have time to think of such things: Species of fish from panfish to striped bass scattered throughout the state, and so many streams and lakes with launch ramps and accesses to some of the best fishing I know. Humbly I suggest that we have done our jobs well, with the realization that good is never good enough and that problems will always exist.

Reflections and Aspirations



Russ Getti,

I move back to the window and watch a huddle of anglers as a tip-up reaches skyward and I smile. Back at the tying bench, I have chosen a reprieve from fishing to continue to fashion offerings for next year. I am hoping for many more casts to waters known and unknown and I am looking to fulfill my needs and desires as an angler and boater. You see, for many of us, it is not only a job, but a way of life. Many of us not only work for the agency, but fish and boat as well, and that means that we want many of the same things you want. I have had a good season and hope that you have had the same.

I hope to see you "on the water" in the coming year. I hope to shake your hand and ask your opinion of fishing in the Keystone State. I realize that without the support of the license-buying public, my job and my fishing would not be as good as it is today.













